Issue 36

PS

1955 Series

THE PREVENTIVE MAINTENANCE MONTHLY

KILT HIM A B'AR

Ol' Davy Crockett was quite a guy. He built up a reputation as a top-notch woodsman and a crack shot, and in those days you could only build a reputation one way—by performance. Ol' Davy delivered the goods.

Of course, some of his pals might have been stretching the truth just a little bit when they claimed he killed himself a b'ar when he was only three years old. It might be hard to say just how old he was when he threw down on old Bruin for the first time, but he sure killed a lot of em after that. And it didn't matter if it was a four-legged or two-legged varmint that tangled with him—he knew there was only one way of taking care of 'em. He knew he had to have good weapons, in good condition, and with a good man behind them.

Talking wouldn't do it. The only way men like Davy Crockett knew they were going to have meat on the table—and get back home to eat it—was to know their gear and know that it would perform.

True sights—preservative oil—dry powder—clean weapon—good flint—clean, true ammo—most of the things a frontiersman kept his mind on are the same things a good soldier checks on today.

Just like he and his pals might have said: "It just don't make no diffrunce"—if you're wearing a coonskin hat or a steel helmet, if you're using a flintlock or your trusty M1, if you're riding a flop-eared jackass or an M48—oil in the right place, cloth on the dirt, tightening and checking right along, all will help see that you get there, get the job done and get back.

For you or for Davy Crockett, Preventive Maintenance still means the same thing—you'll get performance when the chips are down.

KILT HIM A B'AR

Ol' Davy Crockett was quite a guy. He built up a reputation as a top-notch woodsman and a crack shot, and in those days you could only build a reputation one way—by performance. Ol' Davy delivered the goods.

Of course, some of his pals might have been stretching the truth just a little bit when they claimed he killed himself a b'ar when he was only three years old. It might be hard to say just how old he was when he threw down on old Bruin for the first time, but he sure killed a lot of em after that. And it didn't matter if it was a four-legged or two-legged varmint that tangled with him—he knew there was only one way of taking care of 'em. He knew he had to have good weapons, in good condition, and with a good man behind them.

Talking wouldn't do it. The only way men like Davy Crockett knew they were going to have meat on the table—and get back home to eat it—was to know their gear and know that it would perform.

True sights—preservative oil—dry powder—clean weapon—good flint—clean, true ammo—most of the things a frontiersman kept his mind on are the same things a good soldier checks on today.

Just like he and his pals might have said: "It just don't make no diffrunce"—if you're wearing a coonskin hat or a steel helmet, if you're using a flintlock or your trusty M1, if you're riding a flop-eared jackass or an M48—oil in the right place, cloth on the dirt, tightening and checking right along, all will help see that you get there, get the job done and get back.

For you or for Davy Crockett, Preventive Maintenance still means the same thing—you'll get performance when the chips are down.

PS MAGAZINE

Issue No. 36 **1955 Series**

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limitations of availability, older issues may be obtained direct from Preventive Maintenance Agency, Raritan Arsenal, Metuchen, New Jersey.

IN THIS ISSUE

FEATURE ARTICLES

Break That Hydra-Matic Log Jam	2
For a Good Turn—Slow Down	9
Servicing CD-500 Filters	10
A Bubble's No Trouble With Recoil Oil	16
Which Recoil Oil When	18
How To Adjust Headlights (Cartoon Section)	21
How To Tumble Timber (Cartoon Section)	26
Firing Grenades? Get the Right Lock	34
Carbine Quick-Check	36
M33 FCS: Dis and Data	38
Ordering Spare Parts—Engineers	42
A Big Operator Is a VIP	41
Get Hep to Your Heater	44

DEPARTMENTS

Connie Rodd	12
Sgt Half-Mast	29
Armament	34
Engineers	40
Contributions	47
Connie Rodd's Briefs	49

PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write to: **Sgt Half-Mast, PS Magazine, Raritan Arsenal, Metuchen, New Jersey.** Names and addresses are kept in confidence.

DISTRIBUTION: Active Army: Gen Staff, DA (except G1) (1); G1 (2); SS, DA (1); Tec Svc, DA (except COFENGR, COFORD) (5); COFENGR (75); COFORD (275); Admin & Tec Svc Bd (5); Hq, CONARC (10); OS Maj Comd (5); Os Base Comd (3); MDW (3); Armies (50); Corps (3); Div (except Armd) (2); Armd Div (100); Tng Div (50); Brig (3); Regt/Gp (3); Bn (5); Co (except CML, Med, QM) (18); CML Co (8); Med Co (8); QM Co (8); Ft & Cp (8); USMA (25); Gen & Br Svc Sch (except Engr, Ord) (5); Engr Sch (100); Ord Sch (25); Joint Sch (5); Specialist Sch (5); PMST (except Ord) (3); Ord PMST (25); Gen Depots (5); Sup Sec, Gen Depots (5); Depots (5); Army Hosp (5); US Army Hosp (5); RTC (100); POE (3); OS Sup Agencies (2); PG (5); Arsenals (25); DB (25); Cruit Main Sta (3); Div Engr (2); Engr Dist (2)

NG & USAR: In accordance with list furnished AG Publications Centers. For explanation of abbreviations used see SR 320-50-1.

PS MAGAZINE

Issue No. 36 **1955 Series**

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limitations of availability, older issues may be obtained direct from Preventive Maintenance Agency, Raritan Arsenal, Metuchen, New Jersey.

IN THIS ISSUE

FEATURE ARTICLES

Break That Hydra-Matic Log Jam	2
For a Good Turn—Slow Down	9
Servicing CD-500 Filters	10
A Bubble's No Trouble With Recoil Oil	16
Which Recoil Oil When	18
How To Adjust Headlights (Cartoon Section)	21
How To Tumble Timber (Cartoon Section)	26
Firing Grenades? Get the Right Lock	34
Carbine Quick-Check	36
M33 FCS: Dis and Data	38
Ordering Spare Parts—Engineers	42
A Big Operator Is a VIP	41
Get Hep to Your Heater	44

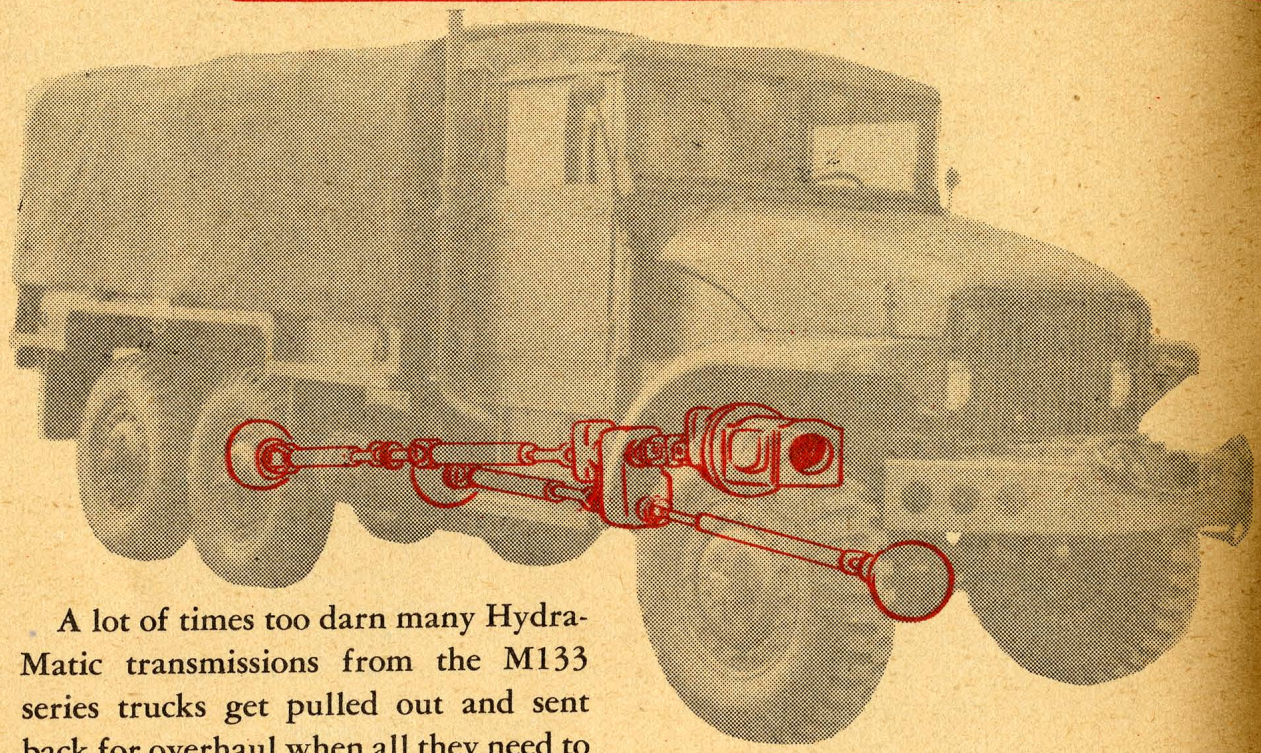
DEPARTMENTS

Connie Rodd	12
Sgt Half-Mast	29
Armament	34
Engineers	40
Contributions	47
Connie Rodd's Briefs	49

PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write to: **Sgt Half-Mast, PS Magazine, Raritan Arsenal, Metuchen, New Jersey.** Names and addresses are kept in confidence.

DISTRIBUTION: Active Army: Gen Staff, DA (except G1) (1); G1 (2); SS, DA (1); Tec Svc, DA (except COFENGR, COFORD) (5); COFENGR (75); COFORD (275); Admin & Tec Svc Bd (5); Hq, CONARC (10); OS Maj Comd (5); Os Base Comd (3); MDW (5); Armies (50); Corps (3); Div (except Armd) (2); Armd Div (100); Tng Div (50); Brig (3); Regt/Gp (3); Bn (5); Co (except CML, Med, QM) (18); CML Co (8); Med Co (8); QM Co (8); Ft & Cp (6); USMA (25); Gen & Br Svc Sch (except Engr, Ord) (5); Engr Sch (100); Ord Sch (25); Joint Sch (5); Specialist Sch (5); PMST (except Ord) (3); Ord PMST (25); Gen Depots (5); Sup Sec, Gen Depots (5); Depots (5); Army Hosp (5); US Army Hosp (5); RTC (100); POE (3); OS Sup Agencies (2); PG (5); Arsenals (25); DB (25); Cruit Main Sta (3); Div Engr (2); Engr Dist (2)
NG & USAR: In accordance with list furnished AG Publications Centers. For explanation of abbreviations used see SR 320-50-1.

BREAK THAT HYDRA



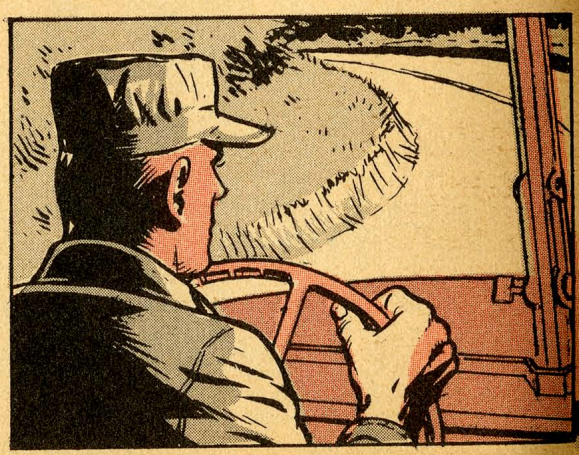
A lot of times too darn many Hydra-Matic transmissions from the M133 series trucks get pulled out and sent back for overhaul when all they need to put them to rights is a few minutes' work right in the truck.

You know the linkage adjustment procedure and the front band adjustment directions you find in TM 9-819A. Do those real careful like, and also check your engine idle and transmission oil pressure. (Para 176,c,4 TM-9-819A, Page 257).

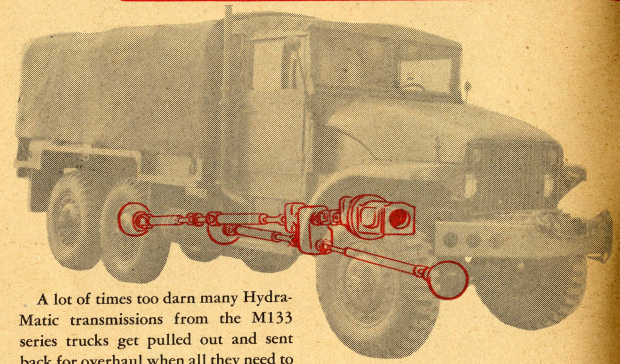
Then, of course, you're ready for the road test. You make this just like it tells you in the TM also, (Para 176, e. pages 259-260). Now the TM has a diagnosis chart to help you understand what the road test showed you was wrong in the transmission.

Here's a more elaborate diagnosis chart which covers a few more and finer points of checking transmissions. You use it like this:

First, you make the road test, taking note of anything that's not just right in the performance of the transmission. (For example, let's say all your shifts occur at too high a vehicle speed.)



BREAK THAT HYDRA-MATIC LOG-JAM



A lot of times too darn many Hydra-Matic transmissions from the M133 series trucks get pulled out and sent back for overhaul when all they need to put them to rights is a few minutes' work right in the truck.

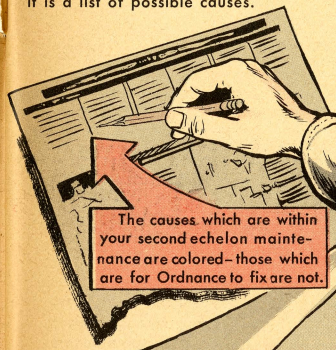
You know the linkage adjustment procedure and the front band adjustment directions you find in TM 9-819A. Do those real careful like, and also check your engine idle and transmission oil pressure. (Para 176,c,4 TM-9-819A, Page 257).

Then, of course, you're ready for the road test. You make this just like it tells you in the TM also, (Para 176, e. pages 259-260). Now the TM has a diagnosis chart to help you understand what the road test showed you was wrong in the transmission.

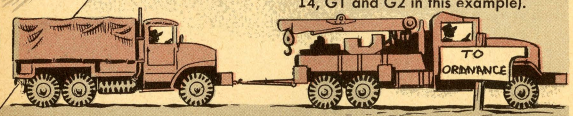
Here's a more elaborate diagnosis chart which covers a few more and finer points of checking transmissions. You use it like this:

First, you make the road test, taking note of anything that's not just right in the performance of the transmission. (For example, let's say all your shifts occur at too high a vehicle speed.)

Second, you find this condition in the list of operating conditions. (First line, in this case) and after it is a list of possible causes.



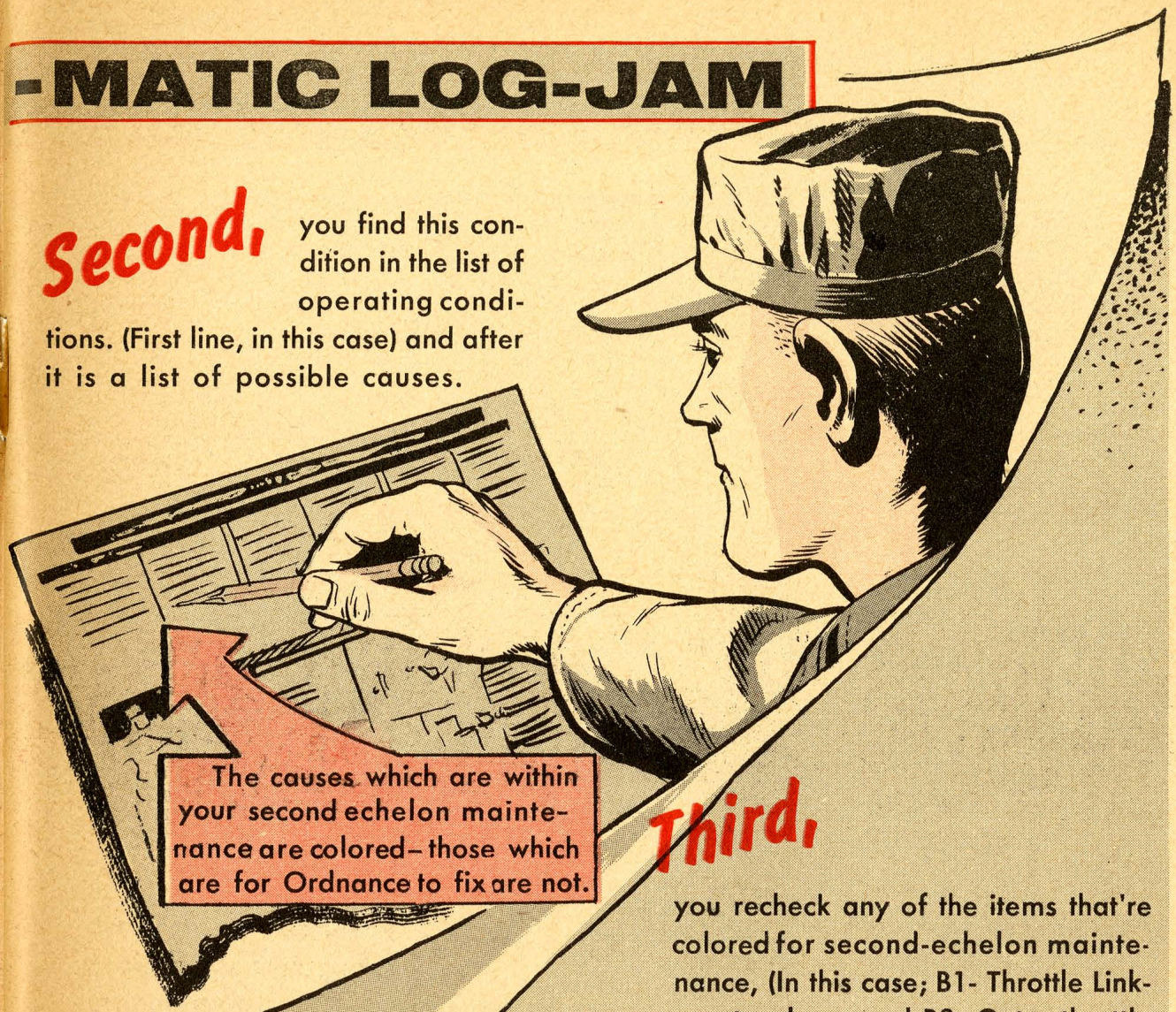
Third, you recheck any of the items that're colored for second-echelon maintenance, (In this case; B1- Throttle Linkage too long, and B3- Outer throttle valve control lever bent, also G4- Valve body loose to case.) If this doesn't cure your **trouble,** then the transmission must go to Ordnance for a check on the internal items (I1, I2, I4, G1 and G2 in this example).



Let the Ordnance people know just what symptoms you have already found on your road test. They'll really appreciate that head start you'll give 'em.

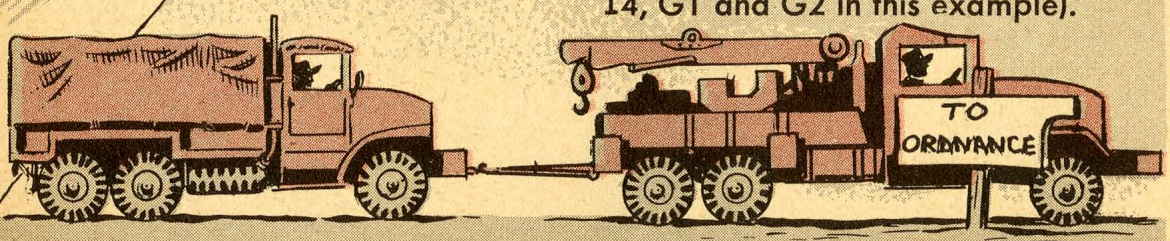
-MATIC LOG-JAM

Second, you find this condition in the list of operating conditions. (First line, in this case) and after it is a list of possible causes.



The causes which are within your second echelon maintenance are colored– those which are for Ordnance to fix are not.

Third, you recheck any of the items that're colored for second-echelon maintenance, (In this case; B1- Throttle Linkage too long, and B3- Outer throttle valve control lever bent, also G4- Valve body loose to case.) If this doesn't cure your **trouble,** then the transmission must go to Ordnance for a check on the internal items (I1, I2, I4, G1 and G2 in this example).

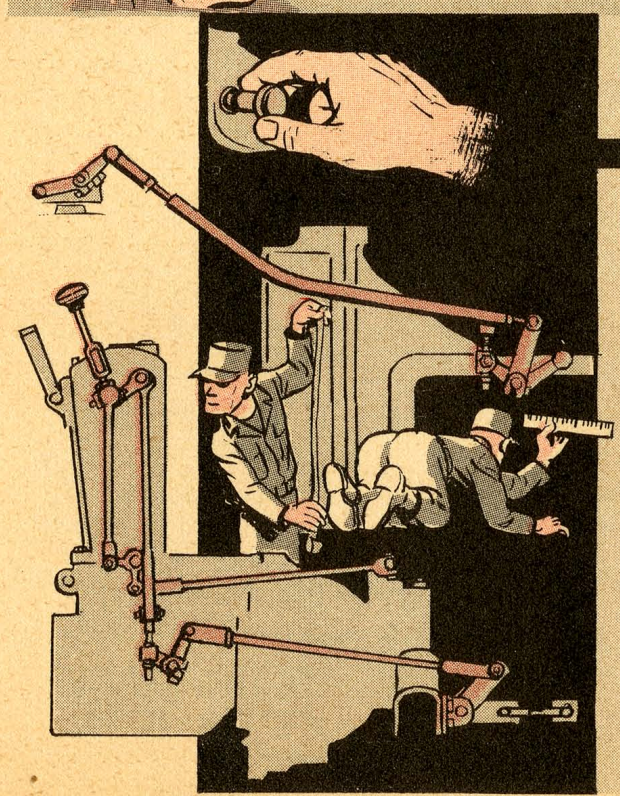


Let the Ordnance people know just what symptoms you have already found on your road test. They'll really appreciate that head start you'll give 'em.

HYDRA-MATIC TRANSMISSION TROUBLE - SHOOTING

Operating Conditions	Possible Causes	Operating Conditions
Upshifts		
All shifts occur at too high a vehicle speed	B1, B3, I1, I2, I4, G1, G2, G4	Rough downshift after vehicle is stopped
All shifts occur at too low a vehicle speed	B2, B3, B6, I1, G1, G2, G4	Improper throttle downshift
1-2 High, 2-3 & 3-4 OK	I1, G1, H1, T3	Downshifts 4-1 or 3-1 on part throttle
1-2 Low, 2-3 & 3-4 OK	I1, I4	Lockup in reverse
2-3 & 3-4 High, 1-2 OK	I1, I4	No reverse—slips
2-3 & 3-4 Low, 1-2 OK	B2, B3, I1	**Slips**
No 3-4 (Full Accelerator)	B10, D1	Slips—light throttle upshifts
Upshifts above 2nd in F2	B5, B6, I1, G2, G4, I4	Slips—Heavy throttle upshifts
Shifts vary (Inconsistent)	E1, E2, B4, B6, F2, G1, G2, G4, I1, I2, H1, P1	Slips—4-3 (forced)
Hunts between two shifts	B5, B6, G1, G2, G4	Slips—2-3
No shifts—stays in first gear	E2, I1, I2, H1, H5, I4, G1, G2, G4, N1, S1, S3	
Shifts from 'high' to 'low' at improper speeds (or does not respond readily)	T3, I1, H5, I4, T1, T2	Slips—1-2
Rough shifts	B1, B2, B3, B6, E1, E2, C1, G1, G2, G4, K4, L5	Slips in all speeds
Downshifts		Slips in 3rd & 4th only
No 4-3 downshift (forced)	B2, B3, B6, G1, Q3	Slips in 2nd & 4th only
Rough 4-3 downshift	C1, G1, K6	Slips 1st, 3rd & Reverse
Rough 3-2 or 3-1 (closed throttle)	A1, B1, C1, G1, L3	Slips in 1st Gear only—reverse OK
		Misses 2nd & 4th

POSSIBLE CAUSES OF TRANS



A. ENGINE IDLE

A1 — Engine idle not set at 375 RPM.

B. LINKAGE

B1 — Throttle linkage too long (Heavy T.V.).
B2 — Throttle linkage too short (Light T.V.).
B3 — Outer throttle valve control lever bent.
B4 — Throttle linkage binding.
B5 — Transmission manual linkage binding and/or out of adjustment. Transfer case linkage binding and/or out of adjustment.
B6 — Throttle valve control lever, outer or inner, loose on shaft.
B7 — Reduction unit lever loose on shaft at reduction unit control valve.
B8 — Reduction unit inner lever loose on shaft.
B9 — Outer manual shift lever loose on valve body shaft.
B10—Throttle linkage and accelerator linkage improperly adjusted. Refer to TM for procedure and specifications.

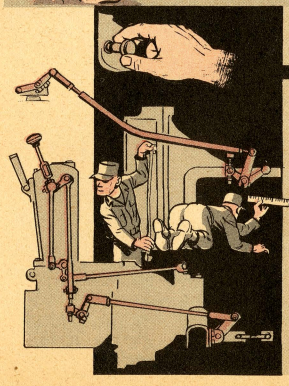
HYDRA-MATIC TRANSMISSION TROUBLE - SHOOTING DIAGNOSIS GUIDE (Colored items are within Second-Echelon maintenance)

Operating Conditions	Possible Causes
Upshifts	
All shifts occur at too high a vehicle speed	B1, B3, I1, I2, I4, G1, G2, G4
All shifts occur at too low a vehicle speed	B2, B3, B6, I1, G1, G2, G4
1-2 High, 2-3 & 3-4 OK	I1, G1, H1, T3
1-2 Low, 2-3 & 3-4 OK	I1, I4
2-3 & 3-4 High, 1-2 OK	I1, I4
2-3 & 3-4 Low, 1-2 OK	B2, B3, I1
No 3-4 (Full Accelerator)	B10, D1
Upshifts above 2nd in F2	B5, B6, I1, G2, G4, I4
Shifts vary (Inconsistent)	E1, E2, B4, B6, F2, G1, G2, G4, I1, I2, H4, P1
Hunts between two shifts	B5, B6, G1, G2, G4
No shifts—stays in first gear	E2, I1, I2, H1, H5, I4, G1, G2, G4, N1, S1, S3
Shifts from 'high' to 'low' at improper speeds (or does not respond readily)	T3, I1, H5, I4, T1, T2
Rough shifts	B1, B2, B3, B6, E1, E2, C1, G1, G2, G4, K4, L5
Downshifts	
No 4-3 downshift (forced)	B2, B3, B6, G1, Q3
Rough 4-3 downshift	C1, G1, K6
Rough 3-2 or 3-1 (closed throttle)	A1, B1, C1, G1, L3

Operating Conditions	Possible Causes
Rough downshift after vehicle is stopped	A1, B4, G1
Improper throttle downshift	B1, B2, B3, B4, B6, G1, G2, G4, I1, I2, I4
Downshifts 4-1 or 3-1 on part throttle	N1
Lockup in reverse	B5, E3, L2
No reverse—slips	B5, E1, E3, F1, F3, G3, N2, N4, N5, N6, N7, N8
Slips	
Slips—light throttle upshifts	B2, C1
Slips—Heavy throttle upshifts	E1, E2, B2, B3, B6, C1, G1, G2, G4, K1, L1
Slips—4-3 (forced)	E2, K3, C4, K1, K4, G1, C6
Slips—2-3	E1, E2, B2, C1, G1, G2, G4, K1, K3, K4, K5, S1, S2, S3, R3, K7
Slips—1-2	K2, S1, S2, S3, Q1, Q4, Q5
Slips in all speeds	E1, E2, B5, G1, G2, G4, P2
Slips in 3rd & 4th only	E1, E2, S1, S2, S3, R1, R2
Slips in 2nd & 4th only	Q1, Q2, Q4, Q5, S1, S2, S3
Slips 1st, 3rd & Reverse	C4, C6, K4, K7
Slips in 1st Gear only—reverse OK	C1, C5, L5
Misses 2nd & 4th	K2, S1, S2, S3, Q1, Q2, Q4, Q5

Operating Conditions	Possible Causes
Misses 1st & 3rd	Q3
Misses one or more shifts	G1, G2, G3, G4, I1, I2, I3, I4
Malfunctions	
Starts in other than 1st gear	I1, I4, G1
Rear band doesn't adjust automatically	C3, R3
No front pump pressure	E1, F2, P1, P2
No forward drive after shifting from "Rev"	N3
No drive when engine is first started	O1
Selector lever won't go into "R"—engine on	B5, H3, I1, I4
Selector lever won't go into "R"—engine off	B5, H2
Trans. will shift into "R" above 7 MPH	H2, H5, I1, I4, T3
Slow band application shifting from "N" to "F1"	C1, L4, L5, K4
Rough shifting "N" to "F1" or "F2"	A1, B1, C1, G1
No drive in HIGH, LOW range OK	B5, B7, B8, T4
No forward drive in either range	E1, E2, B9, C2, C3, C5, L5, P1, P2, K4, G3, S2
Unable to drive engine by pushing or towing	I1, M1, B5, V1,
Water in transmission	U1
Transmission upshifts without vehicle moving	V1, J1
No drive in low, High range OK	B5, B7, B8, T1

POSSIBLE CAUSES OF TRANSMISSION MALFUNCTION

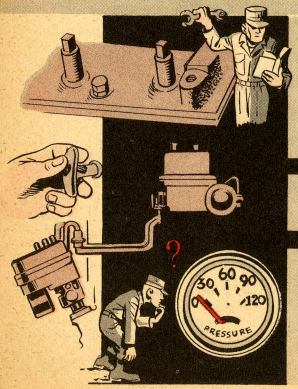


A. ENGINE IDLE

A1 — Engine idle not set at 375 RPM.

B. LINKAGE

B1 — Throttle linkage too long (Heavy T.V.).
B2 — Throttle linkage too short (Light T.V.).
B3 — Outer throttle valve control lever bent.
B4 — Throttle linkage binding.
B5 — Transmission manual linkage binding and/or out of adjustment. Transfer case linkage binding and/or out of adjustment.
B6 — Throttle valve control lever, outer or inner, loose on shaft.
B7 — Reduction unit lever loose on shaft at reduction unit control valve.
B8 — Reduction unit inner lever loose on shaft.
B9 — Outer manual shift lever loose on valve body shaft.
B10 — Throttle linkage and accelerator linkage improperly adjusted. Refer to TM for procedure and specifications.



C. BANDS

C1 — Bands improperly adjusted. Refer to TM for procedure and specifications.
C2 — Broken front band.
C3 — Broken rear band or adjuster strut stuck.
C4 — Front band improperly adjusted.
C5 — Damaged rear band.
C6 — Damaged front band.

D. ENGINE GOVERNOR

D1 — Engine governor set to govern below 3450 RPM full load.

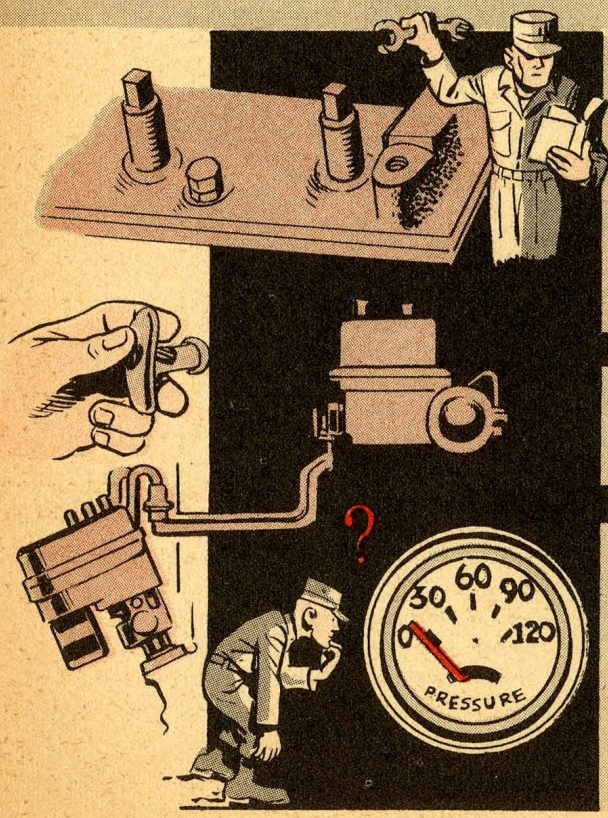
E. OIL PRESSURE

E1 — Incorrect oil level.
E2 — Improper oil pressure. Refer to TM for test procedure and specifications.
E3 — Improper oil pressure in reverse. Excessive pressure loss may be caused by missing or mispositioned pressure regulator reverse oil pipe or reverse clutch pipe or leak of reverse booster pressure.

DIAGNOSIS GUIDE (Colored items are within Second-Echelon maintenance)

Possible Causes	Operating Conditions	Possible Causes
A1, B4, G1	Misses 1st & 3rd	Q3
B1, B2, B3, B4, B6, G1, G2, G4, I1, I2, I4	Misses one or more shifts	G1, G2, G3, G4, I1, I2, I3, I4
N1	**Malfunctions**	
B5, E3, L2	Starts in other than 1st gear	I1, I4, G1
B5, E1, E3, F1, F3, G3, N2, N4, N5, N6, N7, N8	Rear band doesn't adjust automatically	C3, R3
	No front pump pressure	E1, F2, P1, P2
B2, C1	No forward drive after shifting from "Rev"	N3
E1, E2, B2, B3, B6, C1, G1, G2, G4, K1, L1	No drive when engine is first started	O1
E2, K3, C4, K1, K4, G1, C6	Selector lever won't go into "R"—engine on	B5, H3, I1, I4
E1, E2, B2, C1, G1, G2, G4, K1, K3, K4, K5, S1, S2, S3, R3, K7	Selector lever won't go into "R"—engine off	B5, H2
	Trans. will shift into "R" above 7 MPH	H2, H5, I1, I4, T3
K2, S1, S2, S3, Q1, Q4, Q5	Slow band application shifting from "N" to "F1"	C1, L4, L5, K4
E1, E2, B5, G1, G2, G4, P2	Rough shifting "N" to "F1" or "F2"	A1, B1, C1, G1
E1, E2, S1, S2, S3, R1, R2	No drive in HIGH, LOW range OK	B5, B7, B8, T4
Q1, Q2, Q4, Q5, S1, S2, S3	No forward drive in either range	E1, E2, B9, C2, C3, C5, L5, P1, P2, K4, G3, S2
C4, C6, K4, K7	Unable to drive engine by pushing or towing	I1, M1, B5, V1,
C1, C5, L5	Water in transmission	U1
K2, S1, S2, S3, Q1, Q2, Q4, Q5	Transmission upshifts without vehicle moving	V1, J1
	No drive in low, High range OK	B5, B7, B8, T1

MISSION MALFUNCTION



C. BANDS

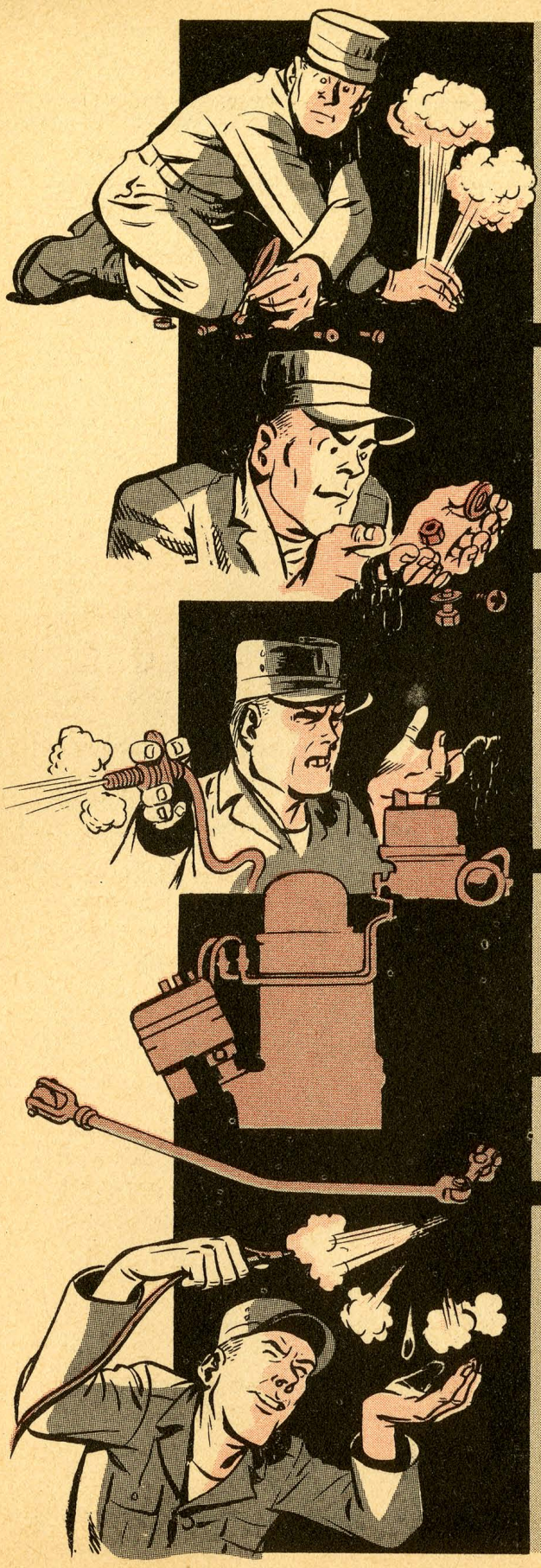
C1 — Bands improperly adjusted. Refer to TM for procedure and specifications.
C2 — Broken front band.
C3 — Broken rear band or adjuster strut stuck.
C4 — Front band improperly adjusted.
C5 — Damaged rear band.
C6 — Damaged front band.

D. ENGINE GOVERNOR

D1 — Engine governor set to govern below 3450 RPM full load.

E. OIL PRESSURE

E1 — Incorrect oil level.
E2 — Improper oil pressure. Refer to TM for test procedure and specifications.
E3 — Improper oil pressure in reverse. Excessive pressure loss may be caused by missing or mispositioned pressure regulator reverse oil pipe or reverse clutch pipe or leak of reverse booster pressure.



F. PRESSURE REGULATOR

F1 — Pressure loss in reverse. This may be caused by the reverse booster plug missing or sticking in the pressure regulator assembly.

F2 — Pressure regulator sticking. This will result in loss of pressure or extremely high pressure. Remove regulator valve and replace regulator plug, then run engines at idle speed not over 30 seconds to flush circuits.

F3 — Pressure regulator plug gasket damaged or missing.

G. CONTROL VALVE ASSEMBLY

G1 — Valve sticking in control valve assembly.

G2 — Internal leak in control valve assembly. (Possibly loose screws or mating surfaces require lapping.)

G3 — Manual valve not indexed with outer shift lever.

G4 — Valve body loose to case.

H. REVERSE BLOCKER BRACKET

H1 — Oil passage leak at reverse blocker bracket. Check with air pressure.

H2 — Reverse blocker piston sticking in reverse blocker bracket.

H3 — Reverse blocker lever crank bent in reverse blocker bracket.

H4 — Worn governor bore in reverse blocker bracket.

H5 — Reverse blocker bracket loose at case.

I. GOVERNOR

I1 — One or both plungers sticking in governor.

I2 — Governor oil delivery pipes leaking at connections.

I3 — Internal leak in governor.

I4 — Broken governor rings and/or damaged ring lands.

J. REDUCTION OUTPUT SHAFT

J1 — Reduction output shaft broken.

K. FRONT SERVO

K1 — Compensator leak in front servo between case and servo or at rear servo compensator pipe connection. Also compensator rings broken in either servo.

K2 — Leak in front servo release passage—check with air pressure.

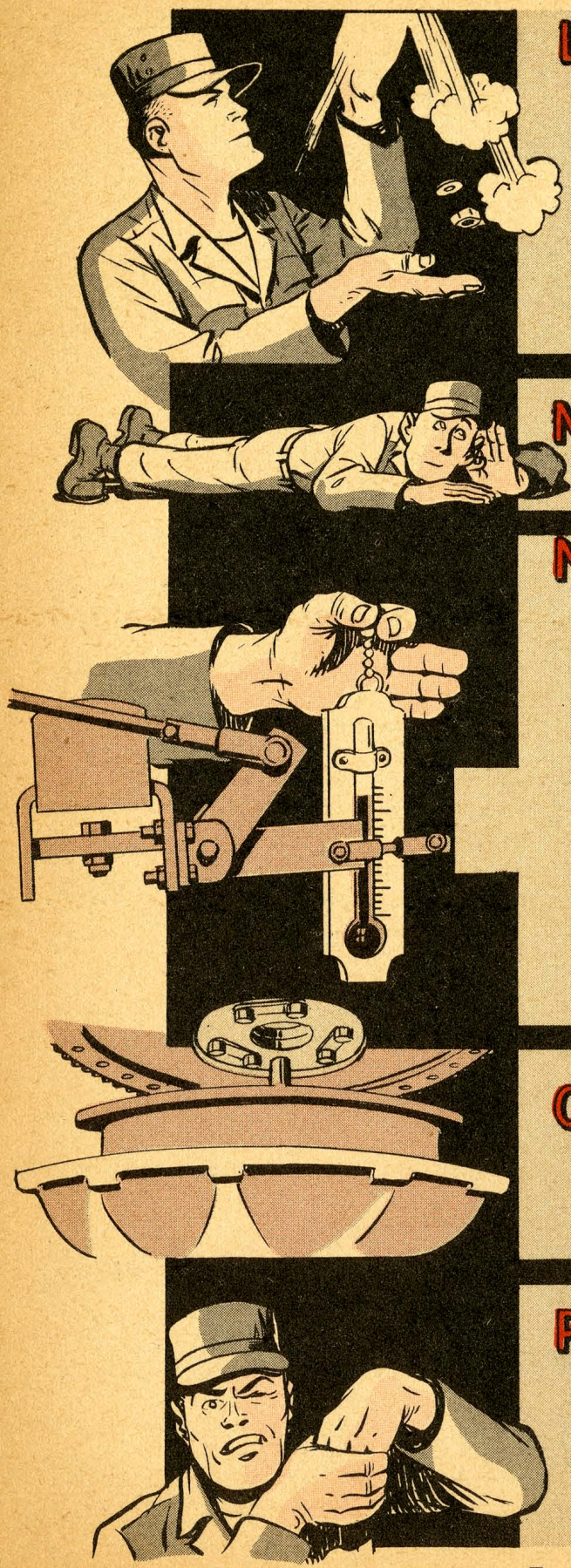
K3 — 4-3 downshift valve retainer spring out of place.

K4 — Front servo sticking.

K5 — 4-3 downshift valve stuck in closed position.

K6 — 4-3 downshift valve stuck in open position.

K7 — Restricted or leaking front servo apply passage in case or servo. Check with air pressure.



L. REAR SERVO

L1 – Compensator passage leak in rear servo. Check with air pressure.

L2 – Leak in rear servo release passage. Check release passage with air pressure with servo mounted on case. Make certain servo applies and releases freely without tendency to stick or chatter.

L3 – Broken or misaligned rear servo check valve. Check valve operating piston stuck.

L4 – Rear servo sticking when applying.

L5 – Bent or broken rear servo actuating lever.

M. REAR PUMP

M1 – Reduction pump inoperative.

N. REVERSE UNIT

N1 – Steel locating ball missing from bronze scavenger pump drive gear allowing gear to slip on reverse carrier. Condition may only be apparent when transmission is hot, allowing bronze gear to expand. Also damaged bronze gear.

N2 – Leaking reverse piston seals will allow slipping and pressure loss in reverse.

N3 – Reverse cone sticking. This will result in no forward drive after reverse application.

N4 – Damaged or worn reverse clutch assembly.

N5 – Reverse clutch piston sticking in the rear bearing bore.

N6 – Reverse piston will not engage reverse clutch stationary cone and reverse internal gear caused by worn cone and/or gear.

N7 – Reverse carrier sheared on output shaft.

N8 – Reverse internal gear broken.

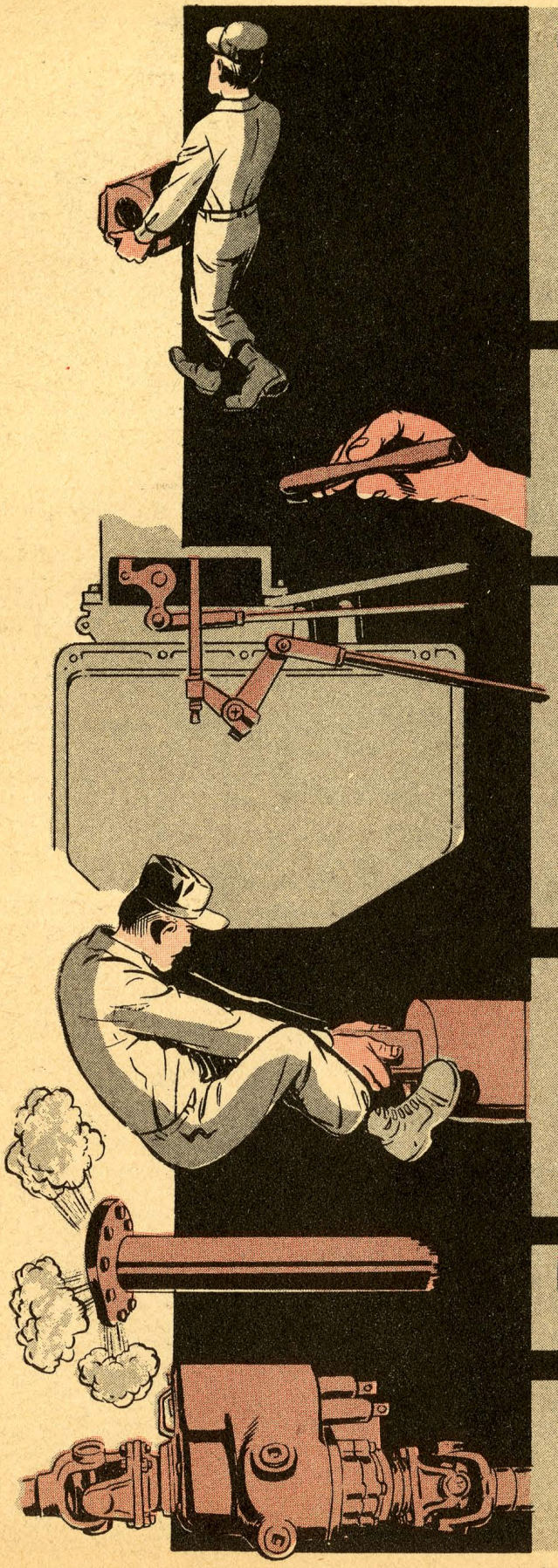
O. TORUS MEMBERS

O1 – Torus check valve sticking or damaged. Refer to TM for checking excessive drain back after engine is shut off.

P. FRONT PUMP

P1 – Front pump slide sticking will cause intermittent low and high pressures or complete loss of pressure.

P2 – Inoperative front pump.



Q. FRONT UNIT

Q1 – Incorrect member of clutch plates or wrong annular piston in front clutch unit.

Q2 – Front clutch unit annular piston seals or expanders damaged.

Q3 – Front planetary unit failure locking front unit in direct drive.

Q4 – Worn or damaged front clutch plates.

Q5 – Worn or damaged front unit drum at clutch drive plate contact surface.

R. REAR UNIT

R1 – Incorrect number of clutch plates or wrong annular piston in rear clutch unit.

R2 – Rear clutch unit annular piston seals or expanders damaged.

R3 – Rear clutch unit drum and pin assembly worn.

S. TRANSMISSION CASE & MISCELLANEOUS

S1 – Loose bearing cap bolts in case allowing leak between oil delivery sleeve and cap. Check for leak at this point by applying air pressure to front and rear clutch apply passages in case after removing valve body. If a leak exists with cap bolts at recommended torque, dress down cap to provide snugger fit to oil delivery sleeve.

S2 – Oil passages not drilled or inter-connected in the case or restricted, remove valve body and air check all case passages. Refer to TM for identification of case passages.

S3 – Broken ring on oil delivery sleeve.

T. REDUCTION UNIT

T1 – Control valve reduction blocker piston not operating due to being stuck in retainer.

T2 – Damaged or worn accumulator parts.

T3 – Reduction blocker line leaking or loose. (Transmission to reduction control valve body.)

T4 – Reduction clutch and reduction cone engaged at the same time.

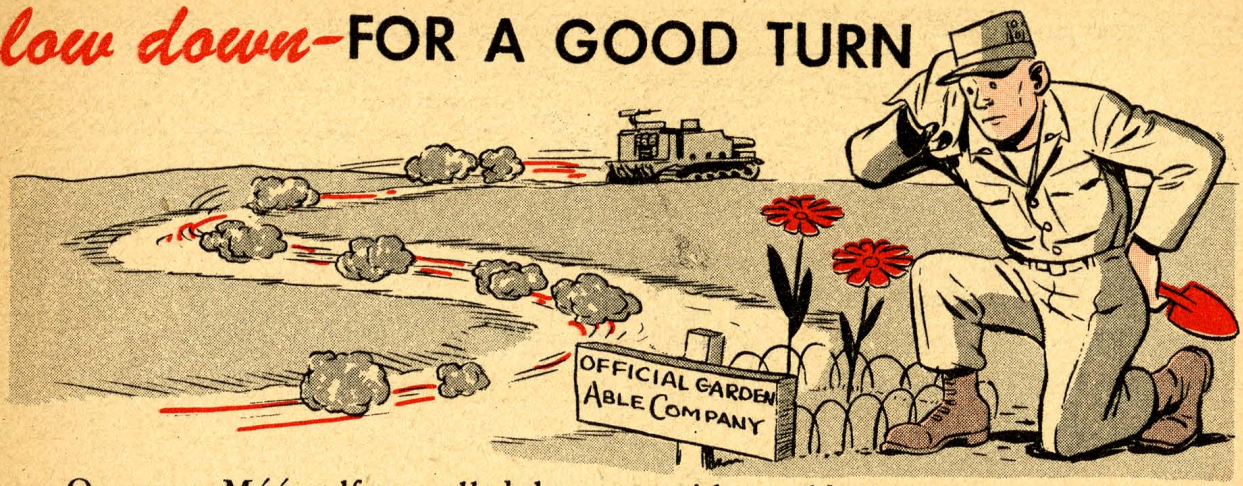
U. OIL COOLER

U1 – Oil cooler seals leaking.

V. TRANSFER CASE

V1 – Transfer case not engaged.

slow down–FOR A GOOD TURN

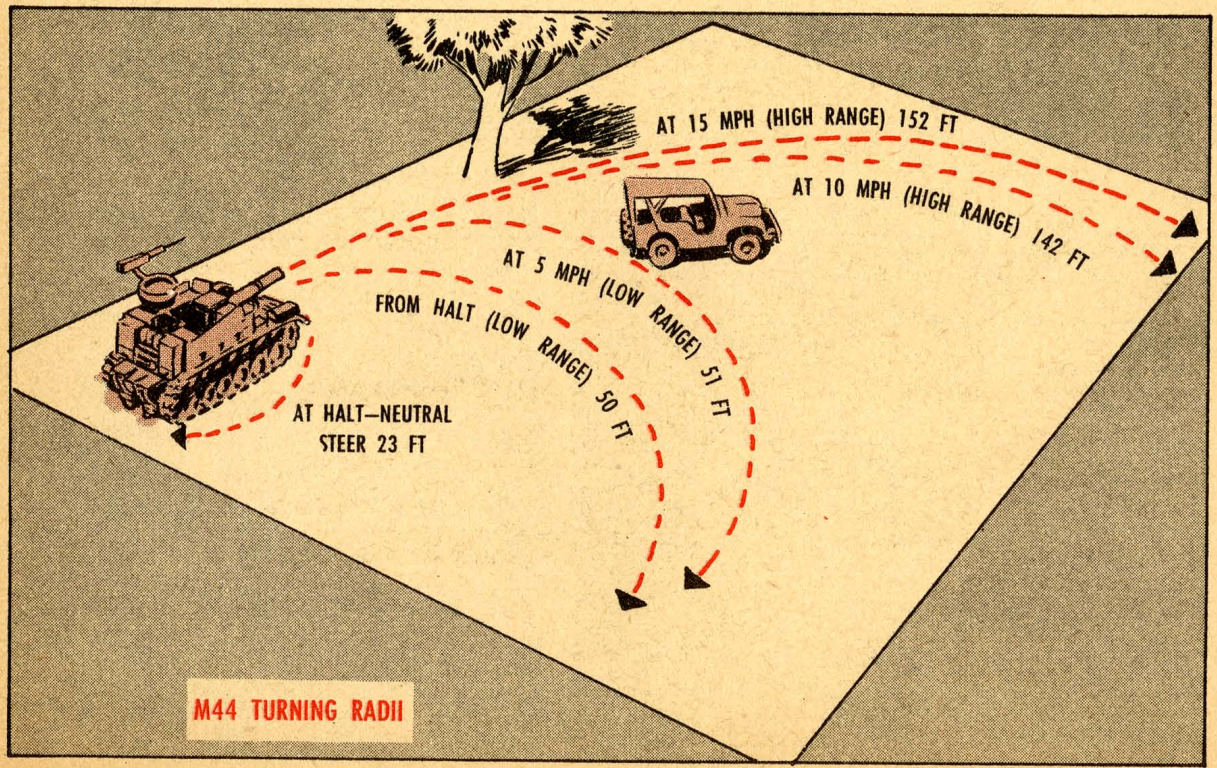


On your M44 self-propelled howitzer, you've got to know its steering behavior—backward and forward. Else y'may be cruisin' for a bruisin'. With six wheels (per side) on the road, it won't whip around like your cousin's hot-rod. It's got longer turning radii than other light-tank vehicles with fewer road wheels.

Cast an eye on the chart below and practice judging your distances a bit, and you'll be able to negotiate a turn without side-swiping a tree or the Ol' Man's Jeep.

If y'hafta be a jerk, do your jerkin' elsewhere. Steer with a light, steady pressure—for slow, even turns. Avoid sharp swerves, and you and the M44'll both live longer, happier lives.

'Nother thing to keep in mind: When steering in reverse, everything's bassackwards from forward steering—clockwise pressure on the handle swings you left; counterclockwise takes you right.

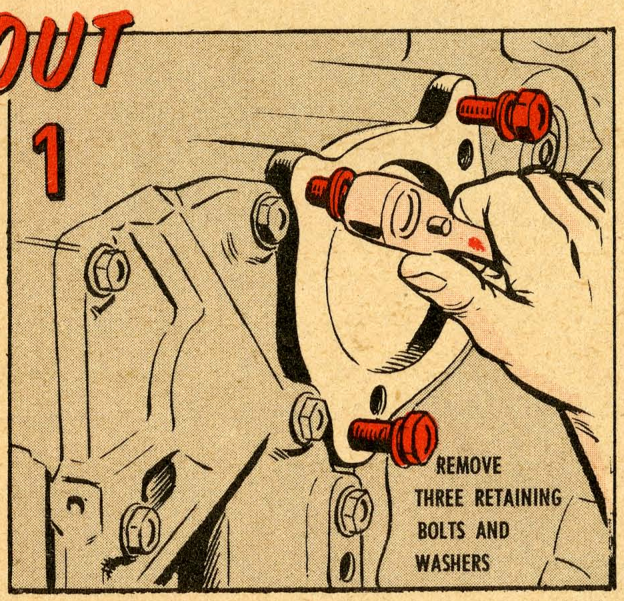


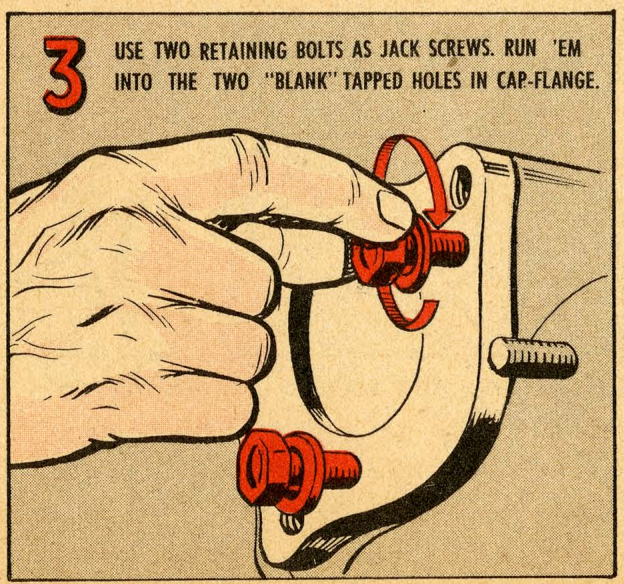
All about Jack-screws

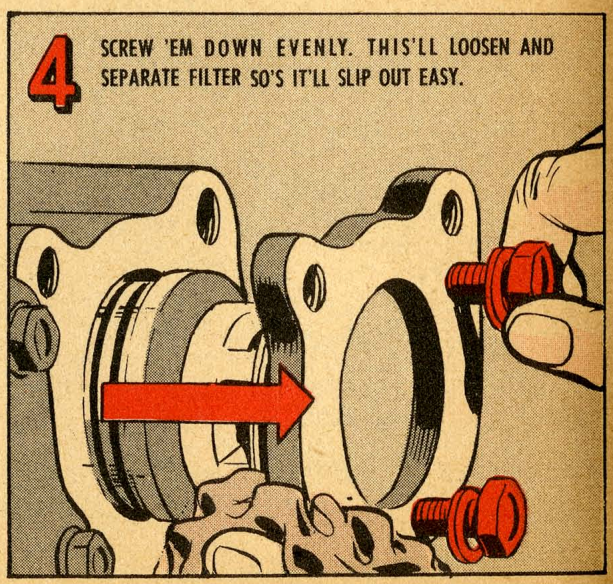
SERVICING CD-500

Been prying out those light tank transmission-oil-filter units with a screwdriver or some such persuader? You'll bust up the caps. Thing to do is use jack-screws. Here's the how for handling CD-500-3 filters at each **C** service:

OUT

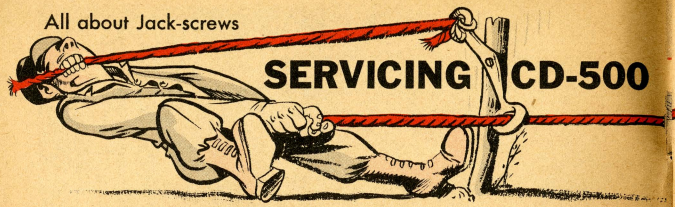






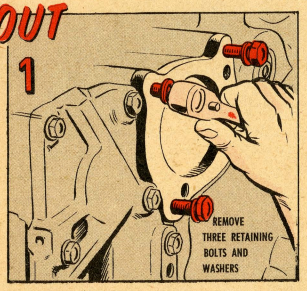
All about Jack-screws

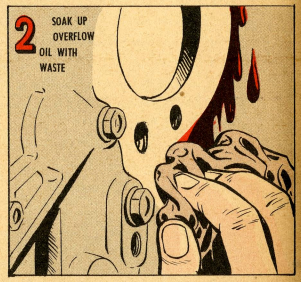
SERVICING CD-500 FILTERS—

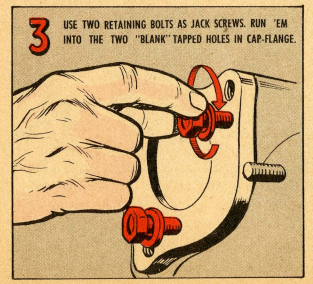


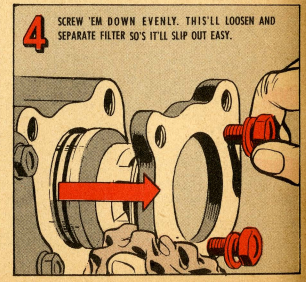
Been prying out those light tank transmission-oil-filter units with a screwdriver or some such persuader? You'll bust up the caps. Thing to do is use jack-screws. Here's the how for handling CD-500-3 filters at each **C** service:

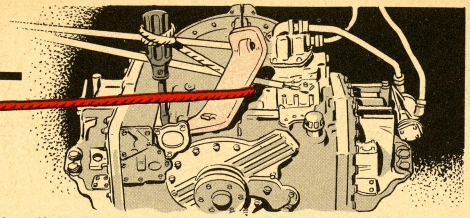
OUT





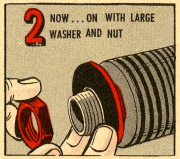


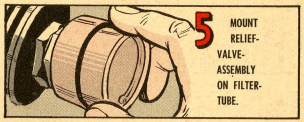


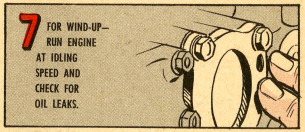


CLEAN—Take off the relief-valve assembly, then the nut, from end of the filter-tube. Remove the O-ring gasket and large washer; toss away the O-ring. Now off with the 31 washers (spacers) and 31 filter disks from the tube. Clean all the parts with solvent—get off all gum and grit. Drain and wipe dry with a clean cloth.

IN

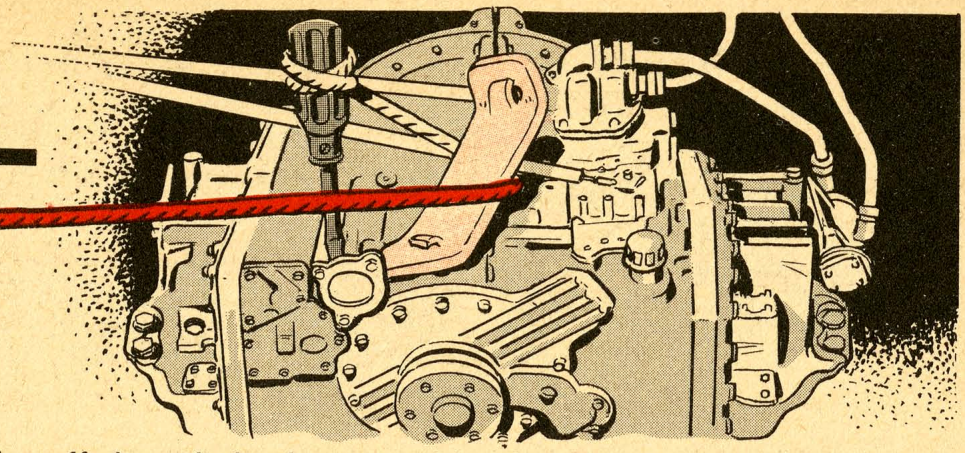






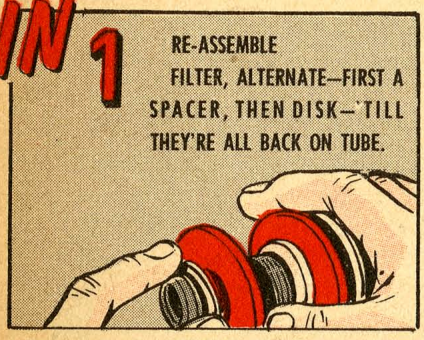
Remember that the oil-cooler-filter unit is similar to the main filter and gets the same **C** service treatment. The chief difference in procedure is that before starting to remove this baby, y'got to disconnect the oil-line at the oil-cooler- coupling and swing it up out of your way. (And connect it, o'course, when you're through.) Also, it's got no relief-valve-assembly to mess with.

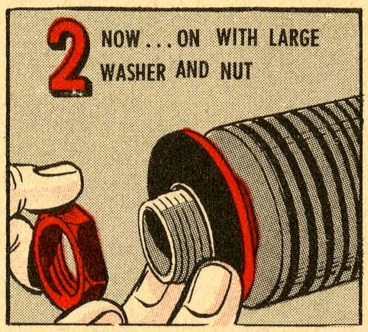
FILTERS—

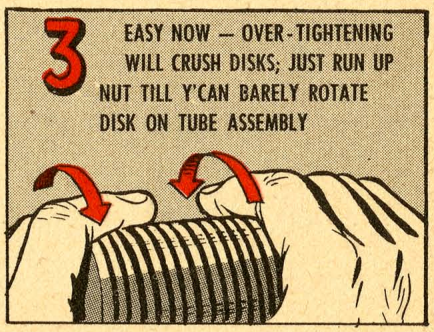


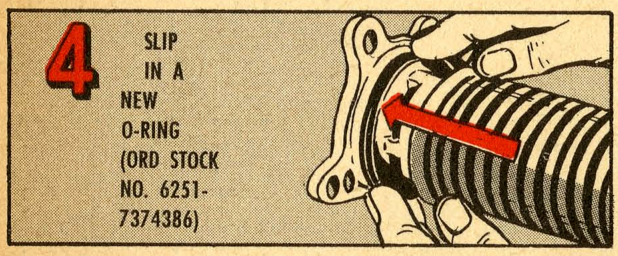
CLEAN—Take off the relief-valve assembly, then the nut, from end of the filter-tube. Remove the O-ring gasket and large washer; toss away the O-ring. Now off with the 31 washers (spacers) and 31 filter disks from the tube. Clean all the parts with solvent—get off all gum and grit. Drain and wipe dry with a clean cloth.

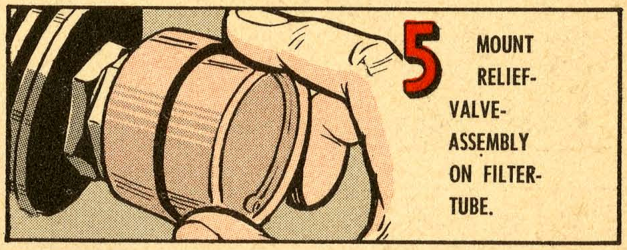
IN

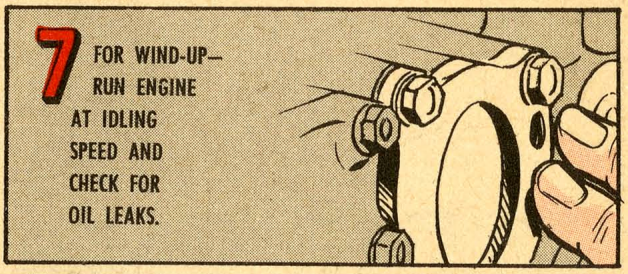




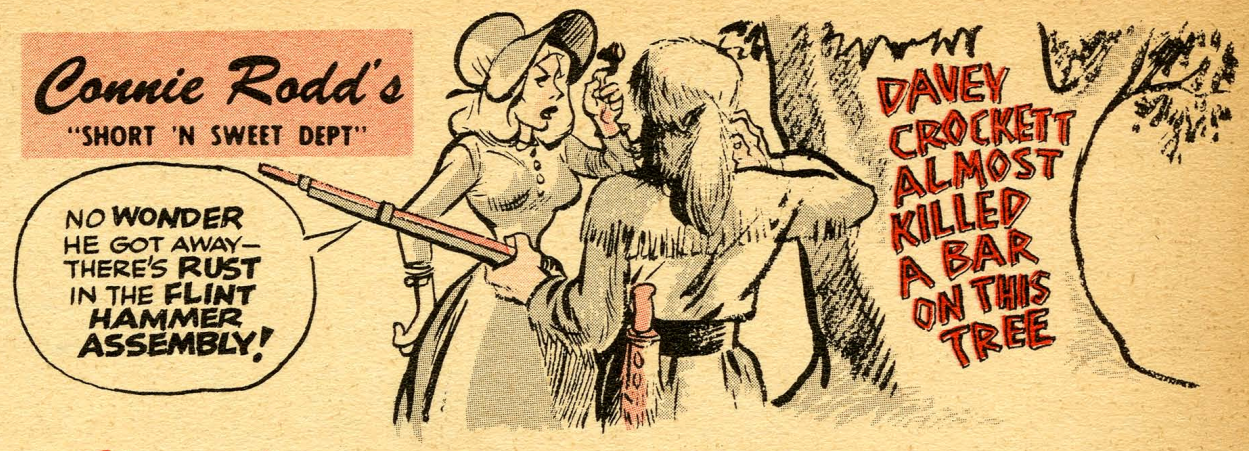








Remember that the oil-cooler-filter unit is similar to the main filter and gets the same **C** service treatment. The chief difference in procedure is that before starting to remove this baby, y'got to disconnect the oil-line at the oil-cooler- coupling and swing it up out of your way. (And connect it, o'course, when you're through.) Also, it's got no relief-valve-assembly to mess with.



Keep the can clean

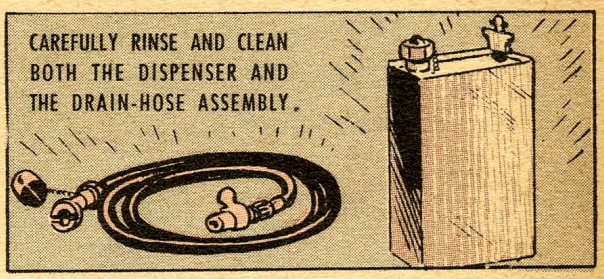
Considering the training a soldier gets, it's a wonder you'd ever have to tell him to clean up a can. But it seems that some of the boys are getting careless with both cans and hoses lately.

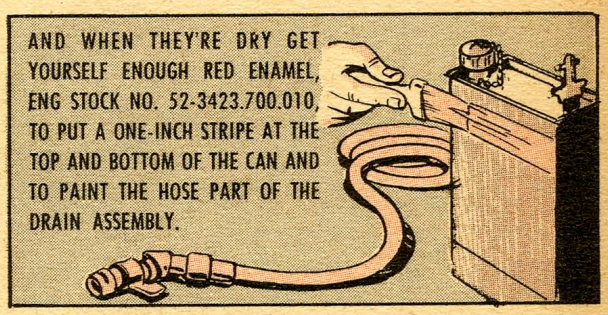
And since these cans and hoses are by name "Oil dispenser, Ord Stock No. Y004-8015822" and "Filler and drain base assembly, Ord Stock No. 33-H-265-500" which are used in handling the potentiometer oil for the variable precision resistors in the NIKE I systems, it's not a bit funny.

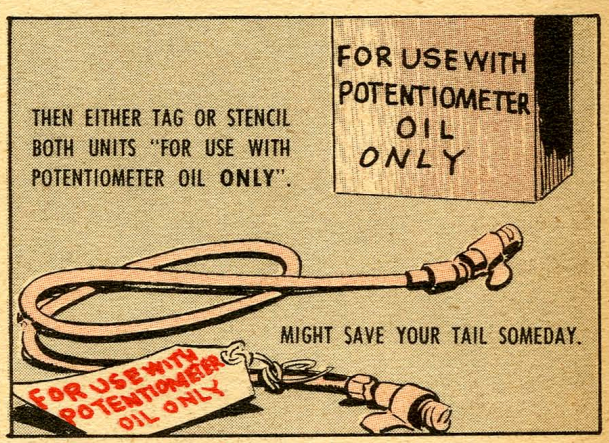
Why? Because the slightest pollution of that oil by foreign material can cause the shorting out of the potentiometer wiring. At the very best this means a thousand or more bucks shot in the tail.

Seems like there have been cases where people have used the cans and hoses for liquids other than pot oil and didn't get things cleaned up afterwards.

SO DO THIS:



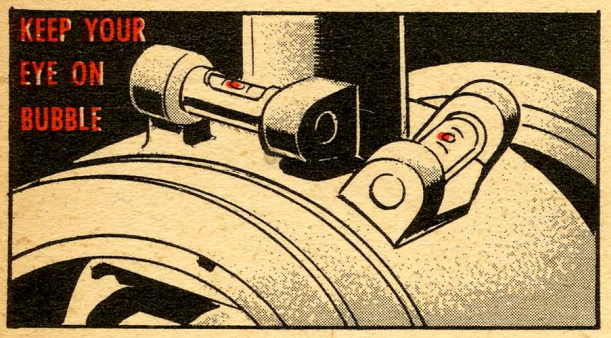




Don't bust your glass

A target, you know, is an elusive thing, particularly prone to flight. It's seldom around for the second round so the first one had better be right.

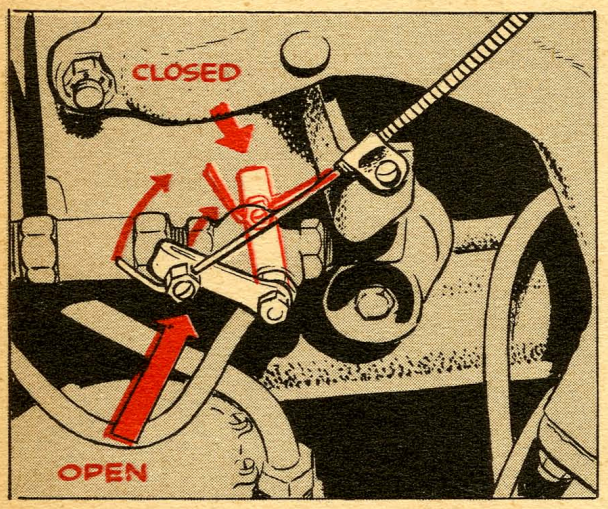
Whether you hit or whether you miss in a knock-down, drag-out fight, depends on the bubble in the leveling vials of your fire-control aiming-sight.



So take care of that sight like you do your own. Keep a focused eye on the bubble. Don't scar or chip or bust the vials. If you do, you've really got trouble.

A purpose in life

That fording valve on your vehicle's got a purpose, just like most things you're familiar with. Try and use it for something 'cept its purpose—you're sure to end up in trouble.

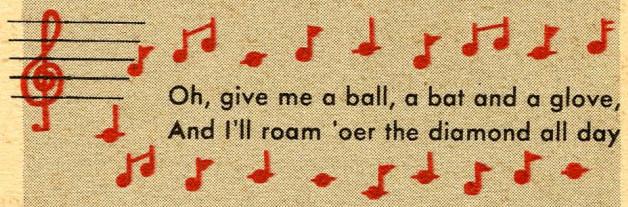


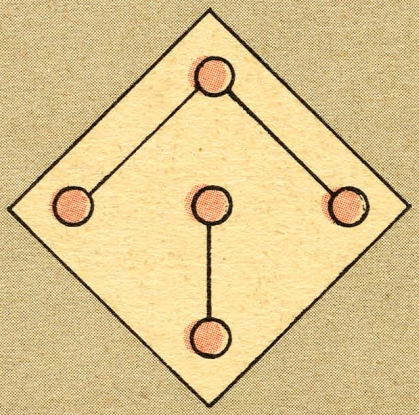
Take the fording valve. When it's **closed,** it creates pressure inside your engine. When fording, this pressure equalizes the water pressure on the outside of your engine.

Now, what happens when you run 'round with that fording valve closed on good, solid ground? Simple. You lose oil aplenty. As that pressure builds up in your crankcase, it pushes oil past the oil seals and piston rings. First thing you know the oil'll foul your spark plugs. Eventually you'll have an engine running without oil.

So, if you want to avoid trouble, check that fording valve every once in awhile and make sure she's **open** when she's not being used for anything 'cept her purpose. A technical bulletin has been prepared to provide instructions for care and operation of fording valve. This publication will be available soon.

WHATZZIT





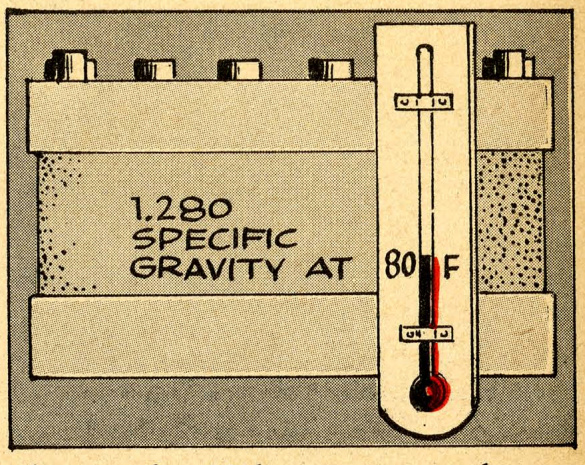
No. It's not a ball diamond. But, you also gotta be errorless in this field to come through with flying colors. Stuck? Well then turn to page 15.

CHARGED AND DRY

In case you're wanting to charge a new battery like was said in PS Magazine Issue 33 (page 18), here's some new dope to latch onto:

If you're fresh out of battery chargers, don't go flipping your lid, lad. A dry-charged battery has charged plates, and it can deliver about 75 per cent of the battery's rated capacity—with no charging.

All you have to do with that dry charged battery is to fill the cells to the right level with electrolyte (1.280 specific gravity at 80 degrees F). Keep your battery and acid above 60 degrees, but below 100 degrees F.



Let her stand 5 to 10 minutes and add a little more electrolyte to make up for what was absorbed by the plates and separators. Then, your battery's ready to use.

Now—if you're not going to use that battery for 12 hours, you ought to charge it (if you've got a charger) until the specific gravity becomes constant.

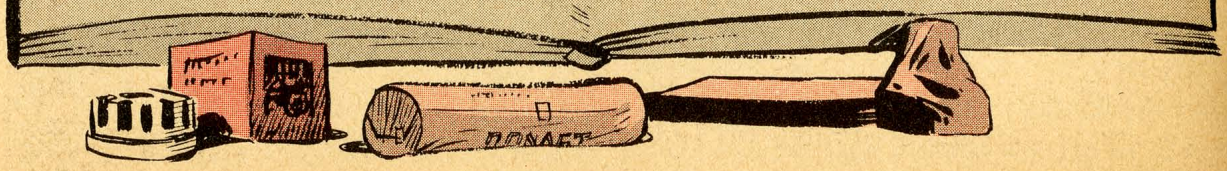
If you've got cold weather (below 0 degrees F), you'll have to give it a 6- to 12-hour charge at a low rate to raise the specific gravity of the electrolyte above the freezing danger point.

Know your supply manuals

The new Ord 1 (Feb 55), "Introduction" to Ordnance supply manuals, has been printed and distributed and should've hit your supply room by now.

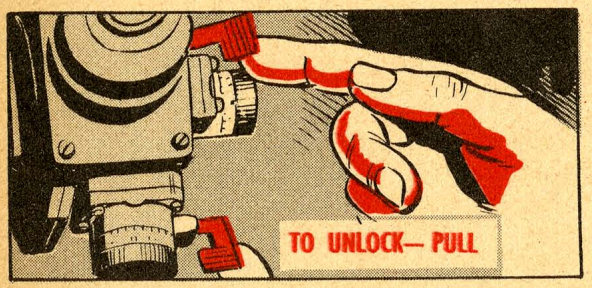
It's a book all you unit supply men'll get to know and appreciate. And anybody who needs to know the score on Ordnance supply manuals will spend a lot of time with the new Ord 1. It'll save a lot of worrisome fumbling through the wrong books.

It also pays to keep your copy of Ord 1 attached to your copy of DA Pam No. 310-29 "Index to Supply Manual, Ordnance Corps." You'll know your supply manuals a lot better.



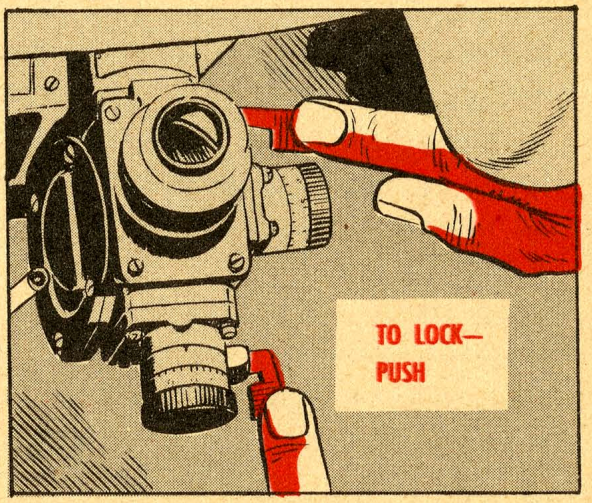
Just a twist

It's the little things in life that count —like trying to turn the azimuth and elevation bore-sighting knobs on your M20A1 (T35) periscopes without unlocking 'em first.

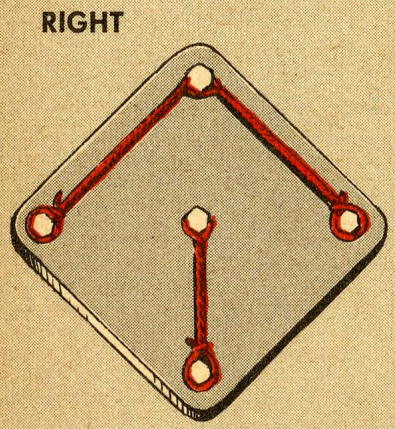


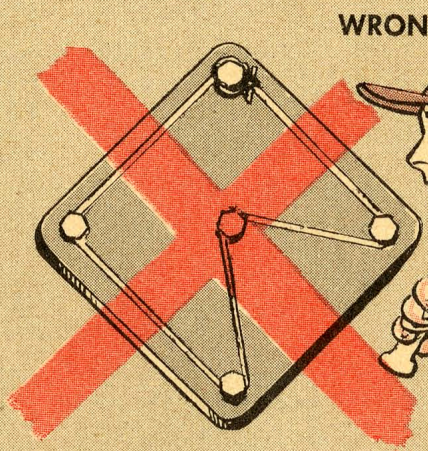
Before you can make any adjustment with those knobs you've got to release the locking levers by pulling 'em toward you. Otherwise you'll twist the sight right out of that periscope.

After you've got the knobs set where you want 'em, then push the levers away from you to hold 'em there.



WHATZZIT ANSWER





It's five cap-screws wired together the right way.

Cap-screws should be wired together in pairs according to size. If there's an odd number of screws, wire the last three together. Threading all the screws on a single wire is an error. A single break at any point in the wire will knock out all your screws. Do it the right way and your fielding average'll be 1.000.

With the Pink Lady...

A LITTLE BUBBLE DOESN'T MEAN

One thing you gotta admit about draining the recoil mechanism on your field artillery piece—it's a pretty colorful experience. What with pastel pink recoil oil, purple language and gunners turning blue in the face, it's a real gone production.

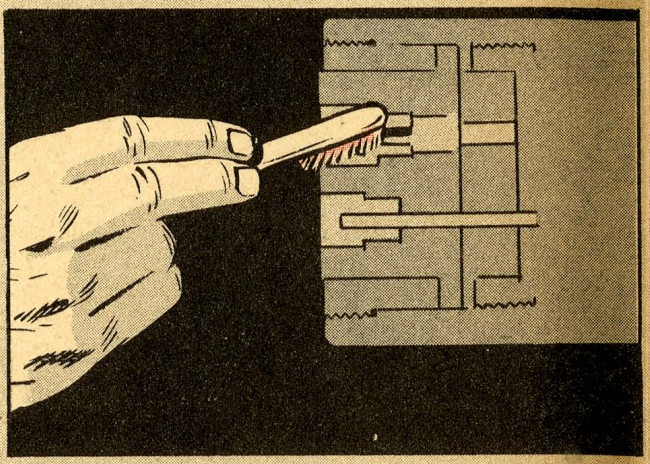
And if you don't think language can get purple and faces can get blue, just wait until you bleed your recoil oil and it comes out emulsified. 'Cause emulsified oil is even less cheerful for old artillerymen than a plague of the pox.

As you know, oil becomes emulsified in two different ways, or a combination of both. Either air (or water) gets into the oil while you're filling the recoil mechanism, or nitrogen leaks into the oil past the floating piston in the cylinder.

When that air, water or nitrogen gets churned up in the oil by the recoil action, the oil gets bubbles, foam and a change of color. So when it's bled out, it may look more like a strawberry soda than recoil oil.

But here's the good news! Bubbles, foam and a change of color in your spec MIL-0-5606 **(Pink Lady)** don't necessarily mean your oil and mechanism are unserviceable! Your oil is emul-

1 WIPE DIRT AND DUST FROM FILL AND DRAIN PLUG. REMOVE PLUG AND CLEAN OUT OIL-VALVE CAVITY WITH SMALL BRUSH (OLD TOOTH



BRUSH), CLEAN, LINT-FREE RAG, SMALL WOOD ROD OR STICK. MAKE SURE NO LINT OR FOREIGN MATTER REMAINS IN CAVITY.

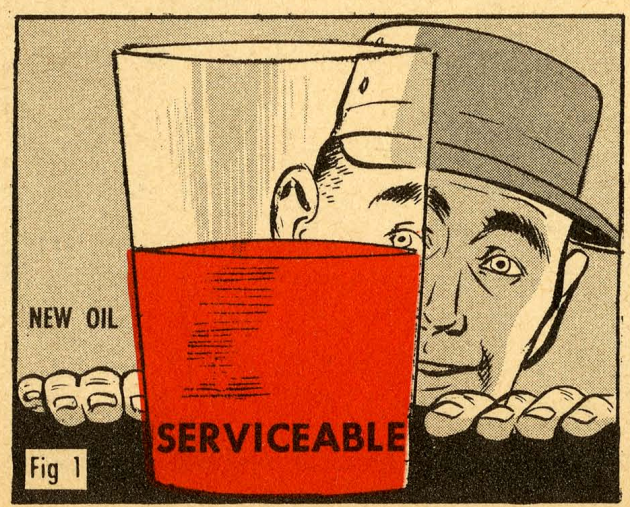


Fig 1

Fig 2

With the Pink Lady...

A LITTLE BUBBLE DOESN'T MEAN TROUBLE

One thing you gotta admit about draining the recoil mechanism on your field artillery piece—it's a pretty colorful experience. What with pastel pink recoil oil, purple language and gunners turning blue in the face, it's a real gone production.

And if you don't think language can get purple and faces can get blue, just wait until you bleed your recoil oil and it comes out emulsified. 'Cause emulsified oil is even less cheerful for old artillerymen than a plague of the pox.

As you know, oil becomes emulsified in two different ways, or a combination of both. Either air (or water) gets into the oil while you're filling the recoil mechanism, or nitrogen leaks into the oil past the floating piston in the cylinder.

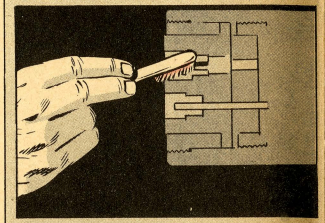
When that air, water or nitrogen gets churned up in the oil by the recoil action, the oil gets bubbles, foam and a change of color. So when it's bled out, it may look more like a strawberry soda than recoil oil.

But here's the good news! Bubbles, foam and a change of color in your spec MIL-0-5606 **(Pink Lady)** don't necessarily mean your oil and mechanism are unserviceable! Your oil is emulsified, yes. But the chances are your piece is still in good working order.

O ho! You say. But how're we gonna know for sure?

Easy. Just follow this outline and chart: First make sure the temperature of the oil is normal, say between + 65°F to 90°F. Then—

1 WIPE DIRT AND DUST FROM FILL AND DRAIN PLUG. REMOVE PLUG, AND CLEAN OUT OIL-VALVE CAVITY WITH SMALL BRUSH (OLD TOOTH BRUSH), CLEAN, LINT-FREE RAG, SMALL WOOD ROD OR STICK. MAKE SURE NO LINT OR FOREIGN MATTER REMAINS IN CAVITY.



2 CLEAN AND INSTALL LIQUID RELEASE TOOL AND HAND TIGHTEN WITH A WRENCH.

3 DRAIN A SAMPLE OF RESERVE OIL INTO A CLEAN DRY, CLEAR GLASS CONTAINER. LET IT STAND ONE MINUTE. COMPARE IT WITH CHART. DRAIN REMAINDER OF OIL, IF ANY, INTO ANOTHER CONTAINER, WATCH IT CLOSELY. IF IT CONTINUES TO SPURT AFTER INDEX HAS RECEDED, TROUBLE'S AHEAD.

Now, the chances are the drained oil will not look like Fig 1. That's new oil that hasn't been jiggled yet.

If your sample oil looks like Fig 2, with approximately 10 per cent foam on the top and just slightly discolored, it's normal and par for the course.

If it looks like Fig 3, with up to 40 per cent foam, **and there was no sputtering after the index receded,** your oil and mechanism are still in good shape.

Even if your sample shows from 60 to 80 per cent foam, your mechanism is all right as long as there was no sputtering after the index receded.

But, if it looks like Fig 4, with about 90 per cent foam, your oil is about ready for the sewer and you should have Ordnance give your mechanism the once-over. But in a critical field situation, it wouldn't be dangerous to fire the weapon as long as it was functioning properly.

Fig 1

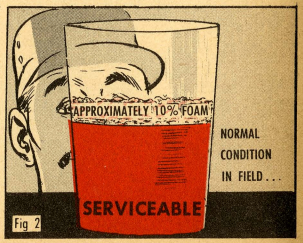


Fig 2

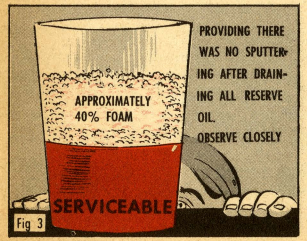


Fig 3

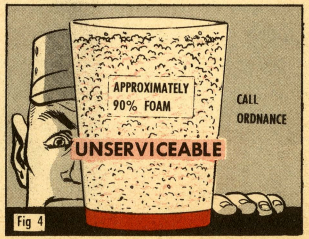


Fig 4

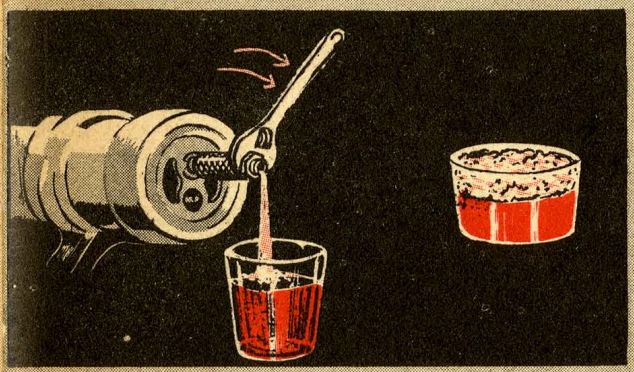
TROUBLE

sified, yes. But the chances are your piece is still in good working order.

O ho! You say. But how're we gonna know for sure?

Easy. Just follow this outline and chart: First make sure the temperature of the oil is normal, say between + 65°F to 90°F. Then—

2 CLEAN AND INSTALL LIQUID RELEASE TOOL AND HAND TIGHTEN WITH A WRENCH.



3 DRAIN A SAMPLE OF RESERVE OIL INTO A CLEAN DRY, CLEAR GLASS CONTAINER. LET IT STAND ONE MINUTE. COMPARE IT WITH CHART. DRAIN REMAINDER OF OIL, IF ANY, INTO ANOTHER CONTAINER, WATCH IT CLOSELY. IF IT CONTINUES TO SPURT AFTER INDEX HAS RECEDED, TROUBLE'S AHEAD.

Now, the chances are the drained oil will not look like Fig 1. That's new oil that hasn't been jiggled yet.

If your sample oil looks like Fig 2, with approximately 10 per cent foam on the top and just slightly discolored, it's normal and par for the course.

If it looks like Fig 3, with up to 40 per cent foam, **and there was no sputtering after the index receded,** your oil and mechanism are still in good shape.

Even if your sample shows from 60 to 80 per cent foam, your mechanism is all right as long as there was no sputtering after the index receded.

But, if it looks like Fig 4, with about 90 per cent foam, your oil is about ready for the sewer and you should have Ordnance give your mechanism the once-over. But in a critical field situation, it wouldn't be dangerous to fire the weapon as long as it was functioning properly.

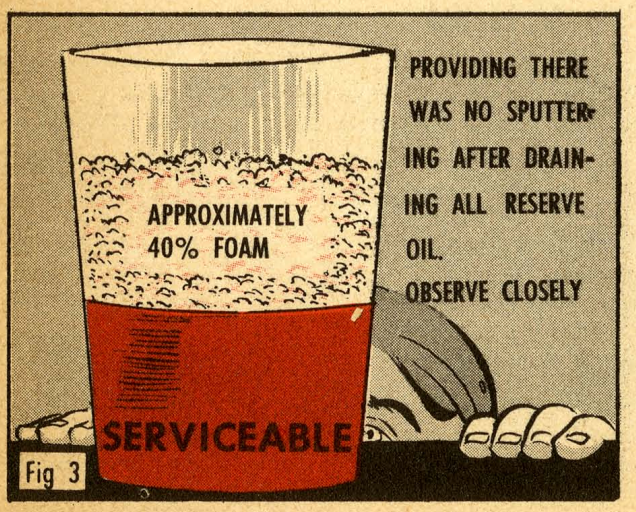


Fig 3

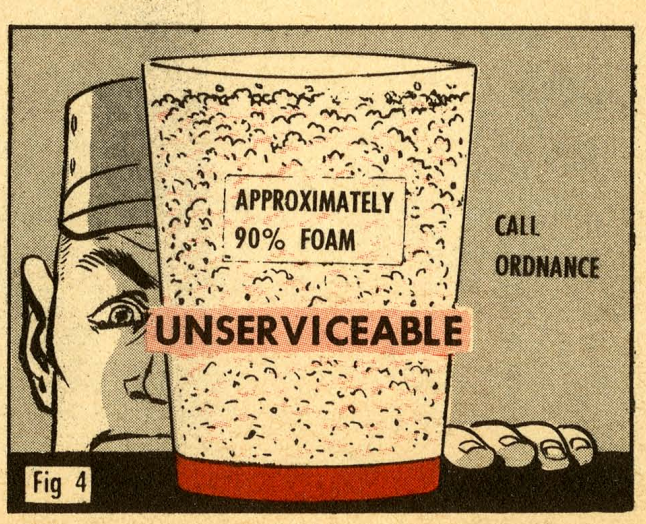


Fig 4

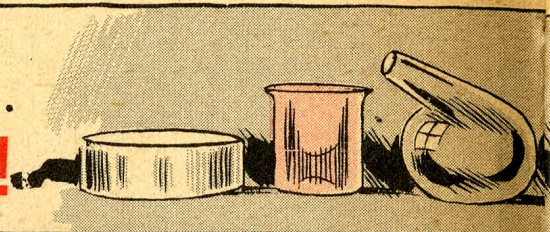
In any case, if the oil kept spurting from the mechanism after the index had receded, call Ordnance. Chances are too much nitrogen is slipping past the floating piston.

Just a coupla other things to keep in mind. Even though your oil and mechanism come out OK, keep a close eye on the recoil and counter-recoil action the next time you fire the piece. Your TM'll tell you how to allow for different temperatures. Call Ordnance if you get any erratic recoil action.

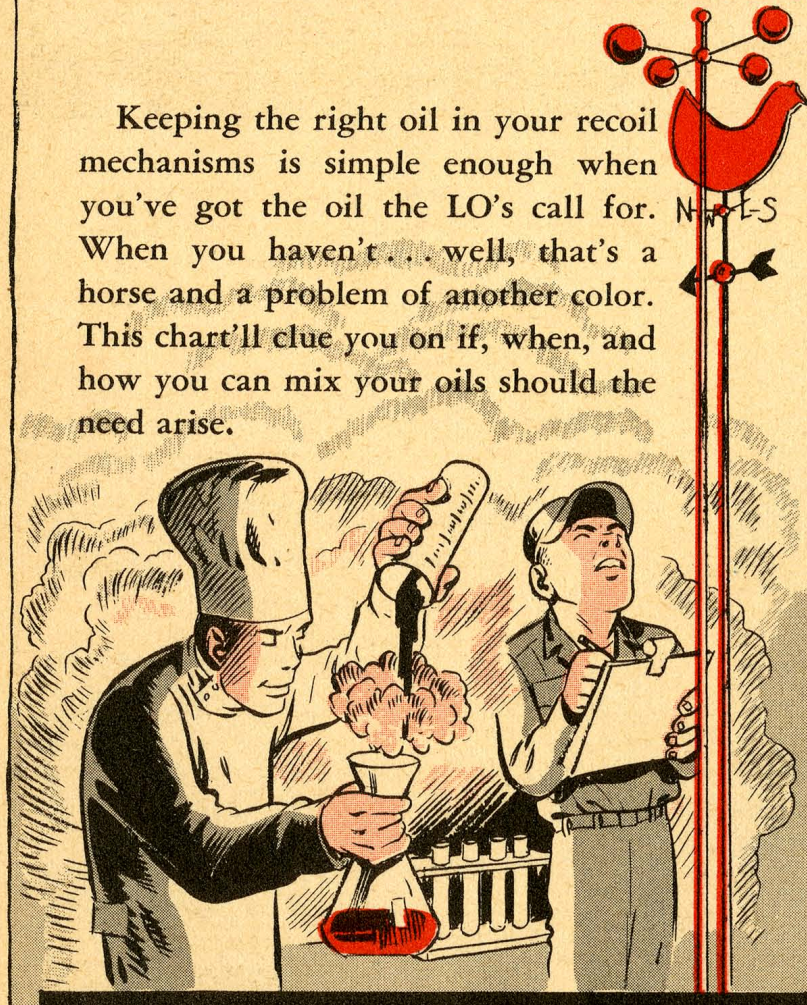
Now, about the only thing left to be decided is how the oil got emulsified. If you're certain no air or moisture entered when you filled the mechanism, it's safe to bet that nitrogen's leaking past the floating piston. But as long as

This Chart and the Weather'll Tell Ya' ...

WHICH RECOIL OIL TO USE !!!



Keeping the right oil in your recoil mechanisms is simple enough when you've got the oil the LO's call for. When you haven't . . . well, that's a horse and a problem of another color. This chart'll clue you on if, when, and how you can mix your oils should the need arise.



RECOIL OIL	ORD STOCK NO.
Hydraulic fluid, petroleum base, OHA (MIL-O-5606) (PINK LADY)	14-0-882-305 (Qt) 14-0-882-315 (Gal) 14-0-884-355 (55-gal)
Hydraulic fluid, petroleum base, preservative, hydraulic equip. OHC (MIL-O-6083A) (RED)	14-0-2832-50 (Qt) 14-0-2832-51 (Gal) 14-0-2832-52 (5-Gal)
Hydraulic fluid, petroleum base, recoil, special (RS) (2-132) (GREEN)	14-0-3246 (Qt) 14-0-3246-10 (Gal)

COLOR CODE: Paint filler plugs on recoil mechanisms orange when 5606 or 6083A oil is used. Plugs on mechanisms using RS (2-132) only should be painted green. When RS (2-132) is added to a mechanism containing 5606 or 6093A, paint a green stripe across the plugs.

Note—See TB Ord 426, TB Ord 586, TB Ord 605, TB Ord 606 for details.

In any case, if the oil kept spurting from the mechanism after the index had receded, call Ordnance. Chances are too much nitrogen is slipping past the floating piston.

Just a coupla other things to keep in mind. Even though your oil and mechanism come out OK, keep a close eye on the recoil and counter-recoil action the next time you fire the piece. Your TM'll tell you how to allow for different temperatures. Call Ordnance if you get any erratic recoil action.

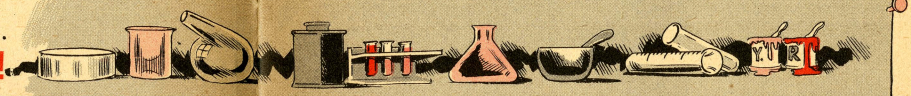
Now, about the only thing left to be decided is how the oil got emulsified. If you're certain no air or moisture entered when you filled the mechanism, it's safe to bet that nitrogen's leaking past the floating piston. But as long as your oil checks out as serviceable, you don't have to worry about it.

When your oil does go bad, Ordnance will take over from there and check your mechanism. So keep your oil free of air, water and muck, and Ordnance will take care of the rest.

If you have green oil or mixed oil in your mechanism and you want to give it a try, you can run through this same test routine. But the results won't be the same. However, if just a little foam shows up in your sample, the chances are your oil is still ready for action. Keep an eye on the recoil action. As long as the recoil and counter-recoil are smooth, your mechanism and oil are serviceable.

This Chart and the Weather'll Tell Ya' ...

WHICH RECOIL OIL TO USE !!!



Keeping the right oil in your recoil mechanisms is simple enough when you've got the oil the LO's call for. When you haven't . . . well, that's a horse and a problem of another color. This chart'll clue you on if, when, and how you can mix your oils should the need arise.

RECOIL OIL	ORD STOCK NO.	FIELD ARTILLERY RECOIL MECHANISMS	ANTI-AIRCRAFT ARTILLERY RECOIL MECHANISMS	TANK ARTILLERY RECOIL MECHANISMS
Hydraulic fluid, petroleum base, OHA (MIL-O-5606) (PINK LADY)	14-0-882-305 (Qt) 14-0-882-315 (Gal) 14-0-884-355 (55-gal)	At temperatures below —20 degrees F, or at time of shipment if mechanism is destined for a low-temperature area . . . **except**—Use it at all times in the T8OE1 and T81.	Use in all hydropneumatic recoil mechanisms at all temperatures.	Preferred for recoil mechanisms at all temperatures except those in M4-series tanks, M46-series tanks, M36-series motor carriages, and M26-series tanks.
Hydraulic fluid, petroleum base, preservative, hydraulic equip. OHC (MIL-O-6083A) (RED)	14-0-2832-50 (Qt) 14-0-2832-51 (Gal) 14-0-2832-52 (5-Gal)	Do not use in hydro-pneumatic recoil mechanisms	Do not use in hydro-pneumatic recoil mechanisms	Can be used by itself or mixed with 5606 or RS (2-132). In temperatures below —20° do not mix with RS (2-132). Do not use in M4-series tanks, M36-series motor carriages, M46-series tanks or M26-series tanks.
Hydraulic fluid, petroleum base, recoil, special (RS) (2-132) (GREEN)	14-0-3246 (Qt) 14-0-3246-10 (Gal)	Use down to —20 degrees F in all field artillery mechanisms . . . **except**—in the T8OE1 and T81 use red oil only.	Not used in AAA hydropneumatic recoil mechanisms. However, counterrecoil buffers on the 90-mm and 120-mm guns, only, use RS down to —20 degrees F. Below —20 degrees F use red oil. Note—75-mm counterrecoil buffer uses red oil at all temperatures. You'll see this in a changed TB Ord 586.	Must be used at all times in recoil mechanisms of M4-series tanks, M36-series motor carriages, M46-series tanks and M26-tanks. In all other hydro-spring mechanisms it can be used alone or mixed with either 5606 or 6083A in temperatures above —20°. Below —20° use 5606 or 6083A only.

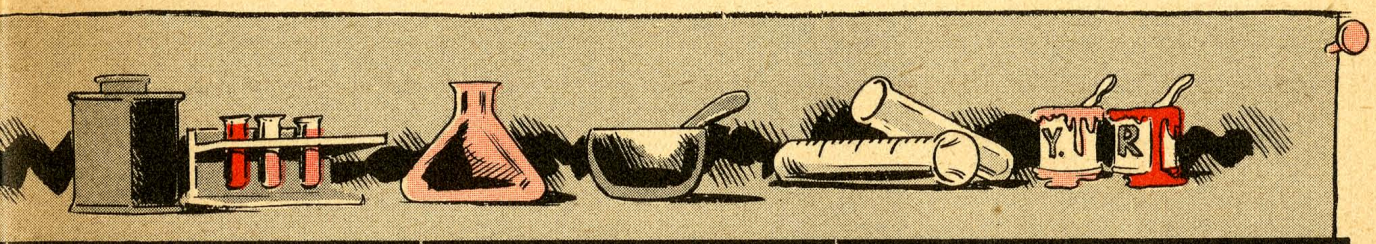
COLOR CODE: Paint filler plugs on recoil mechanisms orange when 5606 or 6083A oil is used. Plugs on mechanisms using RS (2-132) only should be painted green. When RS (2-132) is added to a mechanism containing 5606 or 6093A, paint a green stripe across the plugs.

Note—See TB Ord 426, TB Ord 586, TB Ord 605, TB Ord 606 for details.

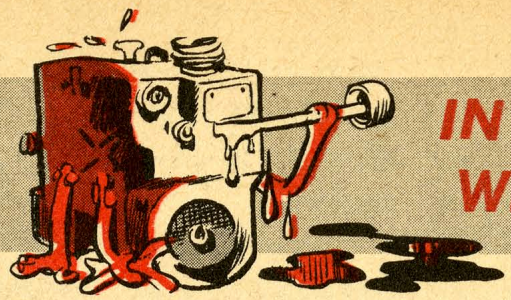
your oil checks out as serviceable, you don't have to worry about it.

When your oil does go bad, Ordnance will take over from there and check your mechanism. So keep your oil free of air, water and muck, and Ordnance will take care of the rest.

If you have green oil or mixed oil in your mechanism and you want to give it a try, you can run through this same test routine. But the results won't be the same. However, if just a little foam shows up in your sample, the chances are your oil is still ready for action. Keep an eye on the recoil action. As long as the recoil and counter-recoil are smooth, your mechanism and oil are serviceable.



FIELD ARTILLERY RECOIL MECHANISMS	ANTI-AIRCRAFT ARTILLERY RECOIL MECHANISMS	TANK ARTILLERY RECOIL MECHANISMS
At temperatures below —20 degrees F, or at time of shipment if mechanism is destined for a low-temperature area . . . **except**—Use it at all times in the T80E1 and T81.	Use in all hydropneumatic recoil mechanisms at all temperatures.	Preferred for recoil mechanisms at all temperatures except those in M4-series tanks, M46-series tanks, M36-series motor carriages, and M26-series tanks.
Do not use in hydro-pneumatic recoil mechanisms	Do not use in hydro-pneumatic recoil mechanisms	Can be used by itself or mixed with 5606 or RS (2-132). In temperatures below —20° do not mix with RS (2-132). Do not use in M4-series tanks, M36-series motor carriages, M46-series tanks or M26-series tanks.
Use down to —20 degrees F in all field artillery mechanisms . . . **except**—in the T80E1 and T81 use red oil only.	Not used in AAA hydropneumatic recoil mechanisms. However, counterrecoil buffers on the 90-mm and 120-mm guns, only, use RS down to —20 degrees F. Below —20 degrees F use red oil. Note—75-mm counterrecoil buffer uses red oil at all temperatures. You'll see this in a changed TB Ord 586.	Must be used at all times in recoil mechanisms of M4-series tanks, M36-series motor carriages, M46-series tanks and M26-tanks. In all other hydro-spring mechanisms it can be used alone or mixed with either 5606 or 6083A in temperatures above —20°. Below —20° use 5606 or 6083A only.



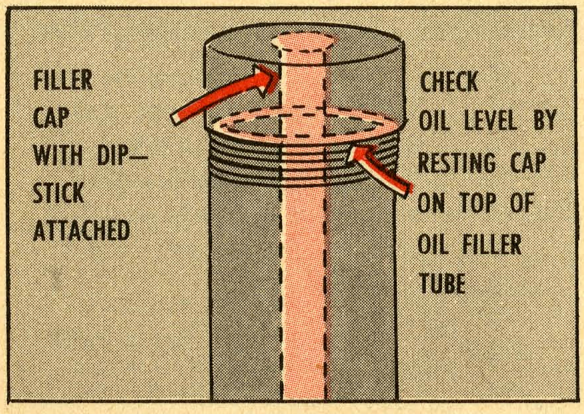
IN THE KNOW WITH LI'L JOE

READING 'EM RIGHT?

There's **one** way to get a true oil level reading on your tank's A41-2 (Detroit Diesel) auxiliary engine.

First—make sure your buggy's level.

Then unscrew the filler cap, take out the dip stick and wipe it with a clean cloth. Put the stick back into the filler tube — with the cap just resting on top of the tube opening. Now



pull out the stick and you'll get a true reading.

Screwing the cap down on the threads for the check'll give you a bum steer—show the lube level higher than it actually is. And then y'go merrily on your way, leaving Li'l Joe hurtin'—for squirtin'. Tch! Tch!

And take it easy on that fill-up, too. The crankcase should have about 3½ quarts—so don't go sloshing in 4 quarts or more and assuming all's well.

Overfilling allows oil to be pulled into the intake system through the crankcase ventilating system—which is a good way to foul up spark plugs, get you excess carbon build-up, general loss of power, etc.

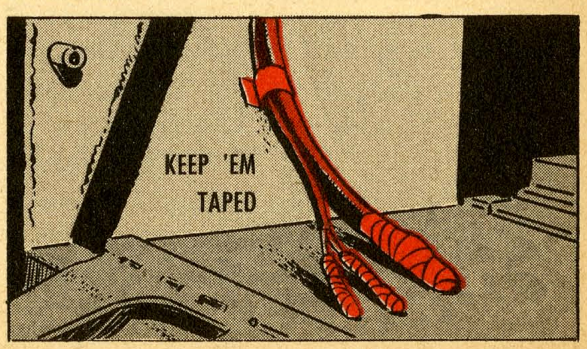
So—take a squint at Joe's crankcase at each "A" service, and keep 'er filled to the FULL mark on the stick. But remember—you can **overdo** it. You'll be seeing this dope in the revised TM's.

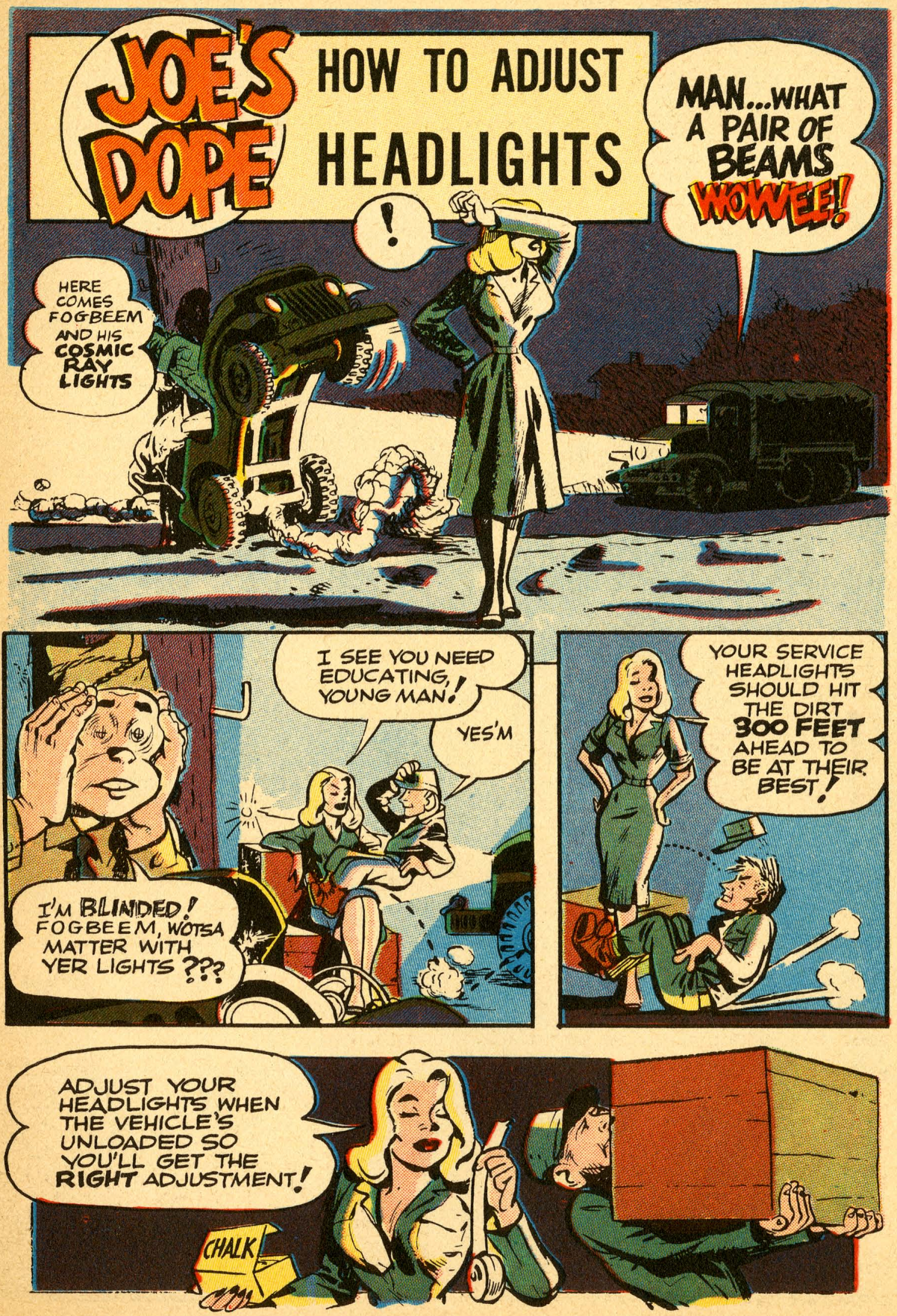
HOT LEADS

Some drivers are taking off in their tanks with their Li'l Joe leads dangling loose, unaware that the positive cable is **hot** when the master switch is ON.

Leaving 'em dangle is real dangerous, 'cause one little spark from the hot cable can cause a big fire.

If Li'l Joe has been removed and the leads are loose you better tape up their ends. This'll keep any stray sparks from igniting loose gas or oil which may be around. So to prevent your or your tank's doom, see if the leads have been left off Li'l Joe before taking off. Your future TM's will have this dope in them.




JOE'S DOPE
HOW TO ADJUST HEADLIGHTS
MAN...WHAT A PAIR OF BEAMS WOWEE!
!
HERE COMES FOGBEEM AND HIS COSMIC RAY LIGHTS
I SEE YOU NEED EDUCATING, YOUNG MAN!
YES'M
I'M BLINDED! FOGBEEM, WOTSA MATTER WITH YER LIGHTS ???
YOUR SERVICE HEADLIGHTS SHOULD HIT THE DIRT 300 FEET AHEAD TO BE AT THEIR BEST!
ADJUST YOUR HEADLIGHTS WHEN THE VEHICLE'S UNLOADED SO YOU'LL GET THE RIGHT ADJUSTMENT!
CHALK

TO CHECK AND ADJUST LIGHTS: USE LEVEL GROUND, PAVED

1

FIRST DRIVE YOUR VEHICLE UP SO ITS LIGHTS ARE EXACTLY 25 FEET FROM THE WALL... JOCKEY THE VEHICLE SO ITS BUMPER IS PARALLEL TO THE WALL... NOW DRAW A LINE FROM THE CENTER OF THE VEHICLE STRAIGHT TO THE WALL.

LIKE THIS

25 FEET FROM VEHICLE LIGHTS TO WALL

5

...AND ANOTHER PARALLEL LINE BELOW IT... 1/12th THE DISTANCE OF YOUR LIGHTS TO GROUND.

X
A
X
A

DISTANCE FROM CENTER OF HEADLIGHT TO GROUND DIVIDED BY 1/12		
M38	36 IN	3 IN
M38A1	36 IN	3 IN
M37	43 IN	3-1/2 IN
M34	50 IN	4 IN
M135	47 IN	4 IN
M41	60 IN	5 IN

6

DROP A PLUMB LINE FROM CENTER OF EACH LIGHT

20" 20"

MEASURE TO CENTER LINE THEN

9

IF THEY'RE OFF, ADJUST BY TURNING SCREWS NEXT TO EACH LIGHT.

VERTICAL ADJUSTMENT

HORIZONTAL ADJUSTMENT

10

CHECK BOTH LIGHTS TOGETHER

THEY AIMED RIGHT?

Yesss, MA'AM!!

TO CHECK AND ADJUST LIGHTS: USE LEVEL GROUND, PAVED

1 FIRST DRIVE YOUR VEHICLE UP SO ITS LIGHTS ARE EXACTLY 25 FEET FROM THE WALL... JOCKEY THE VEHICLE SO ITS BUMPER IS PARALLEL TO THE WALL... NOW DRAW A LINE FROM THE CENTER OF THE VEHICLE STRAIGHT TO THE WALL.

LIKE THIS

25 FEET FROM VEHICLE LIGHTS TO WALL

IF POSSIBLE... FACE A WALL OR SET UP A WIDE SCREEN

2 MEASURE FROM CENTER OF LIGHT TO GROUND

3 MARK OFF THE SAME DISTANCE ON THE WALL AND IN FRONT OF EACH LIGHT.

4 DRAW A LINE THROUGH THE MARKED OFF POINTS... LET'S CALL IT LINE "X"

SAME DISTANCE FROM GROUND

25 FEET

5 ...AND ANOTHER PARALLEL LINE BELOW IT... 1/12TH THE DISTANCE OF YOUR LIGHTS TO GROUND.

DISTANCE FROM CENTER OF HEADLIGHT TO GROUND DIVIDED BY 1/12		
M38	36 IN	3 IN
M38A1	36 IN	3 IN
M37	43 IN	3-1/2 IN
M34	50 IN	4 IN
M135	47 IN	4 IN
M41	60 IN	5 IN

6 DROP A PLUMB LINE FROM CENTER OF EACH LIGHT

20" 20" MEASURE TO CENTER LINE THEN

7 DRAW UP A LINE FOR EACH LIGHT

20 20 MARK OFF SAME DISTANCE AT WALL

8 TURN ON THE HIGH BEAM. COVER ONE LIGHT WHILE YOU AIM THE OTHER.

CENTER OF HOT SPOT SHOULD HIT INTERSECTIONS OF LINES AA AND CC... GIVE OR TAKE A FEW INCHES

CHECK THE LEFT LAMP THE SAME WAY ON LINE BB

VEHICLE CENTER-LINE

RIGHT HAND HEADLIGHT CENTERLINE

6" 6"

BEAM PATTERN

9 IF THEY'RE OFF, ADJUST BY TURNING SCREWS NEXT TO EACH LIGHT.

VERTICAL ADJUSTMENT

HORIZONTAL ADJUSTMENT

10 CHECK BOTH LIGHTS TOGETHER

THEY AIMED RIGHT?

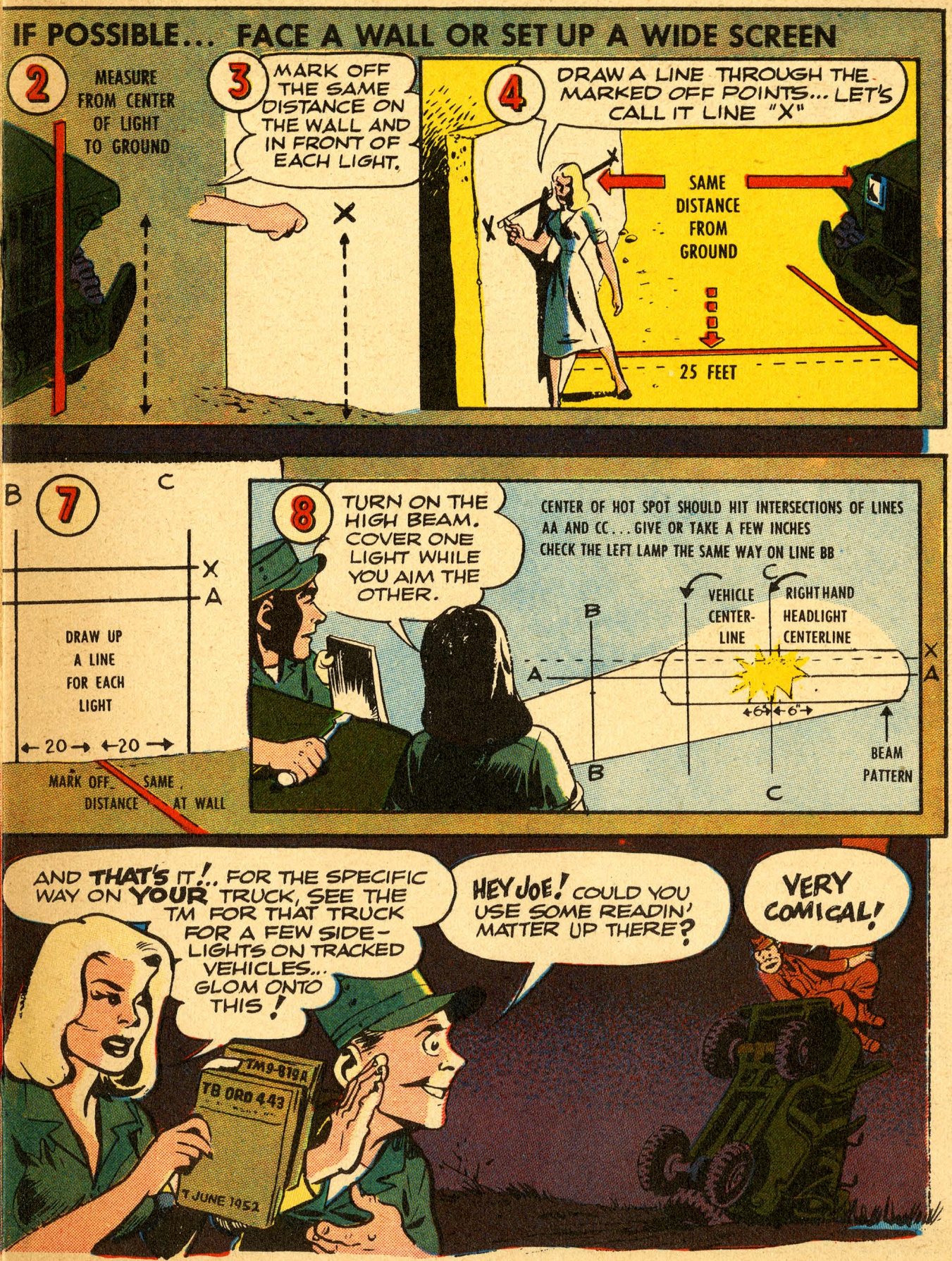
YESSS, MA'AM!!

AND THAT'S IT!.. FOR THE SPECIFIC WAY ON YOUR TRUCK, SEE THE TM FOR THAT TRUCK FOR A FEW SIDE-LIGHTS ON TRACKED VEHICLES. GLOM ONTO THIS!

TM 9-810A TB ORD 443 JUNE 1952

HEY JOE! COULD YOU USE SOME READIN' MATTER UP THERE?

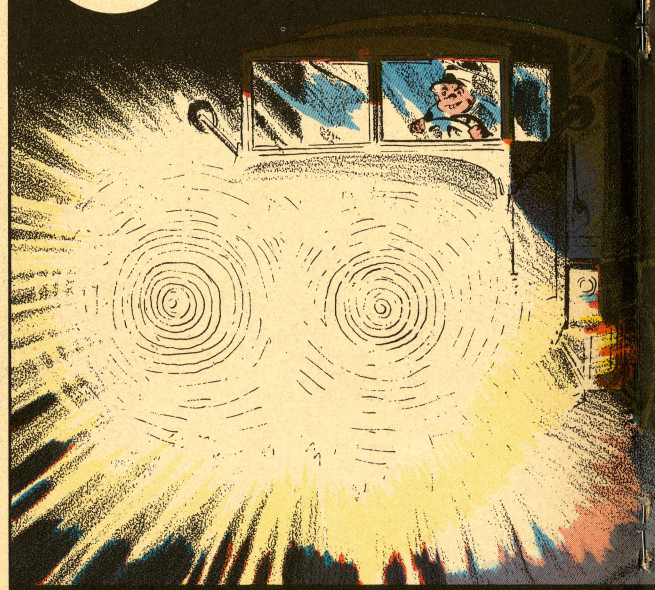
VERY COMICAL!


IF POSSIBLE... FACE A WALL OR SET UP A WIDE SCREEN
2
MEASURE FROM CENTER OF LIGHT TO GROUND
3
MARK OFF THE SAME DISTANCE ON THE WALL AND IN FRONT OF EACH LIGHT.
X
4
DRAW A LINE THROUGH THE MARKED OFF POINTS... LET'S CALL IT LINE "X"
X
SAME DISTANCE FROM GROUND
25 FEET
B
C
7
X
A
DRAW UP A LINE FOR EACH LIGHT
20
20
MARK OFF SAME DISTANCE AT WALL
8
TURN ON THE HIGH BEAM. COVER ONE LIGHT WHILE YOU AIM THE OTHER.
CENTER OF HOT SPOT SHOULD HIT INTERSECTIONS OF LINES AA AND CC . . . GIVE OR TAKE A FEW INCHES
CHECK THE LEFT LAMP THE SAME WAY ON LINE BB
VEHICLE CENTER-LINE
RIGHT HAND HEADLIGHT CENTERLINE
B
A
X
A
6"
6"
B
C
BEAM PATTERN
AND THAT'S IT!.. FOR THE SPECIFIC WAY ON YOUR TRUCK, SEE THE TM FOR THAT TRUCK FOR A FEW SIDE-LIGHTS ON TRACKED VEHICLES... GLOM ONTO THIS!
TM 9-819A
TB ORD 443
JUNE 1952
HEY JOE! COULD YOU USE SOME READIN' MATTER UP THERE?
VERY COMICAL!

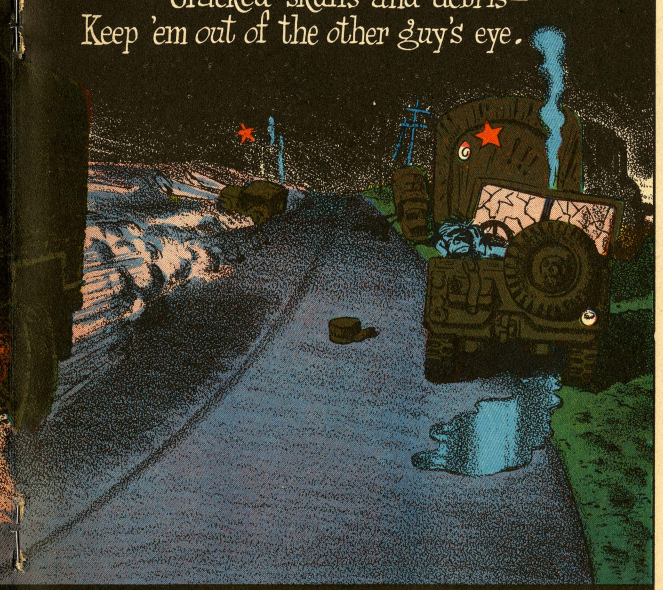
JOE'S Dope Sheet

WE HAVE THE WORLD'S BEST EQ

JOE'S Dope Sheet



As a driver, our Joe's a bright guy,
But he once set his light beams too high.
The results as you see—
Cracked skulls and debris—
Keep 'em out of the other guy's eye.

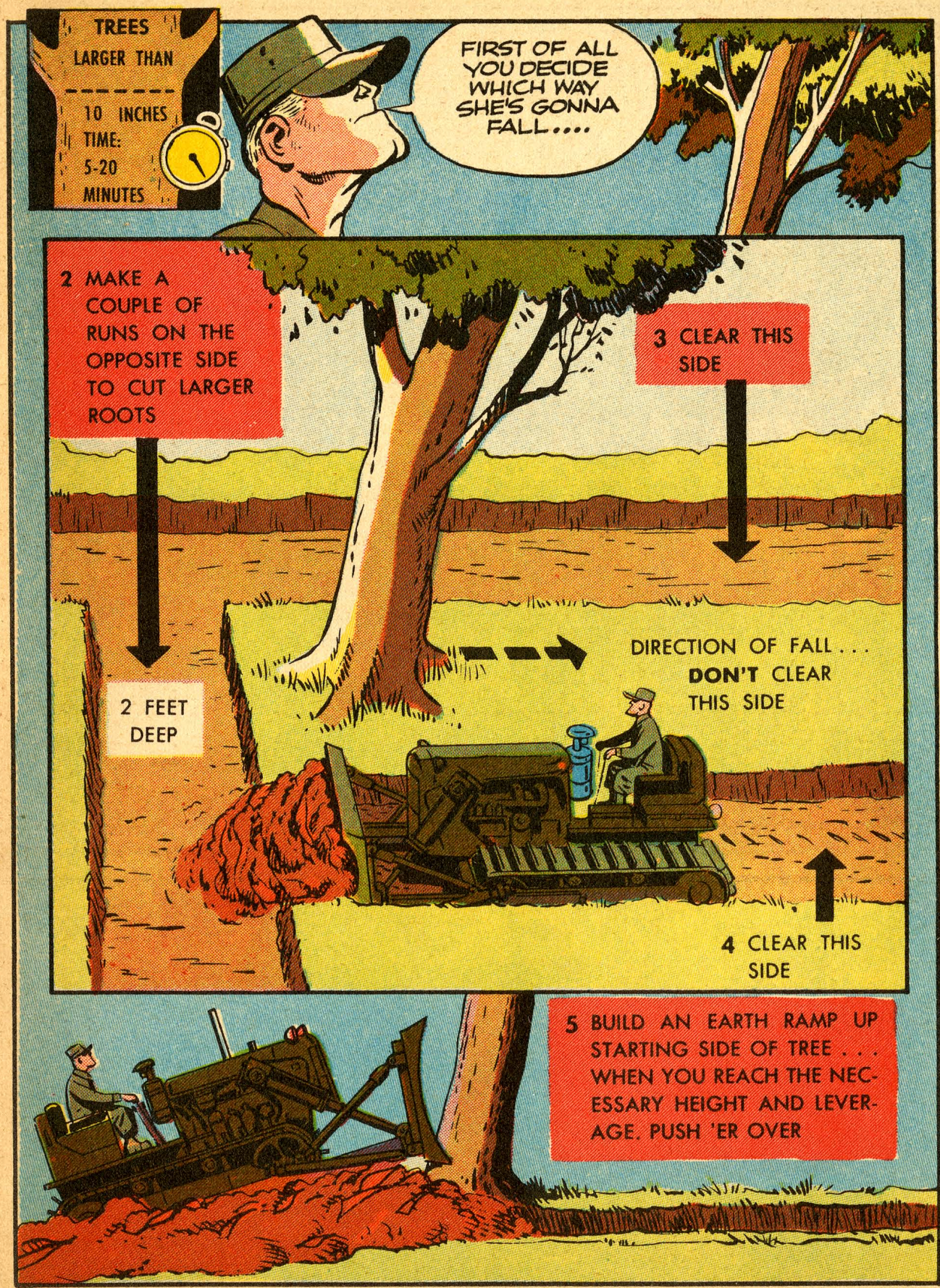


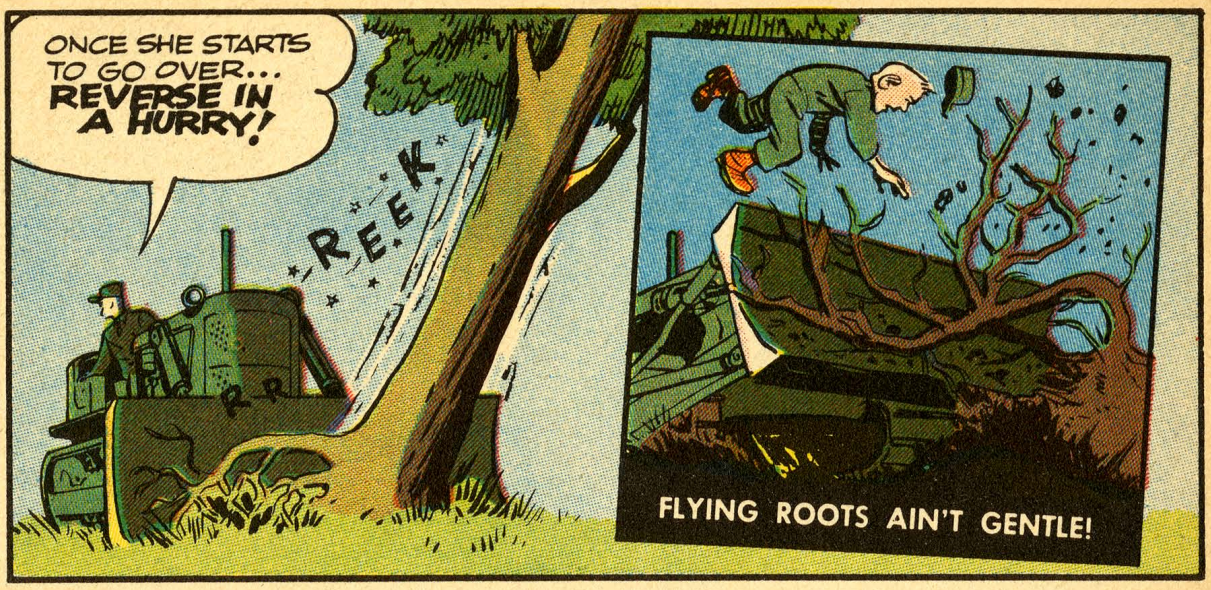
WE HAVE THE WORLD'S BEST EQUIPMENT...Take care of it

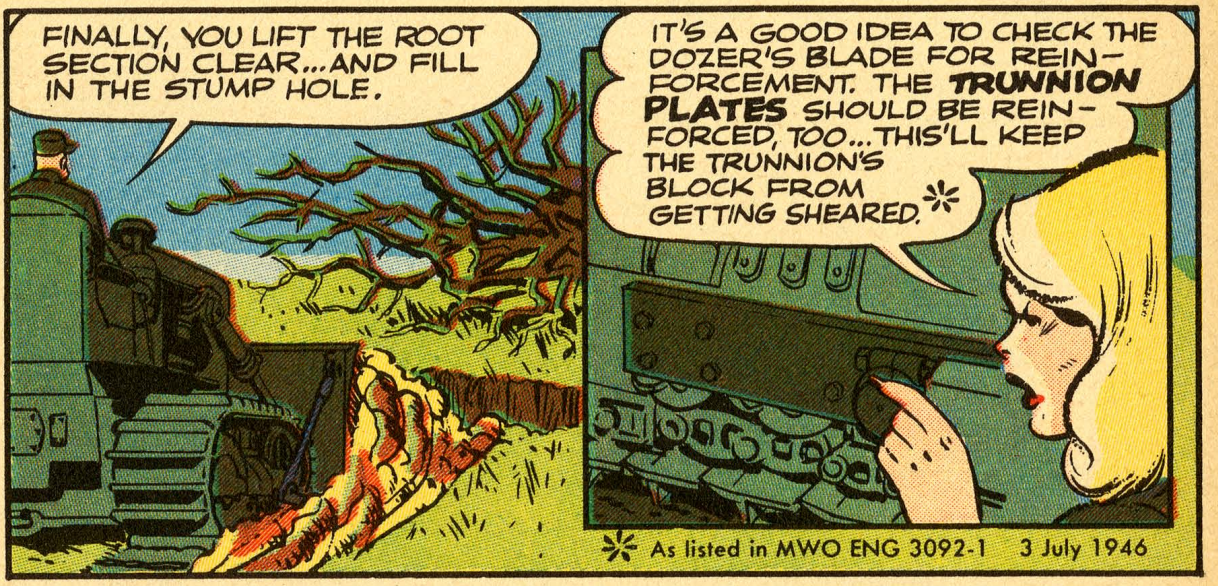
As a driver, our Joe's a bright guy,
But he once set his light beams too high.
The results as you see—
Cracked skulls and debris—
Keep 'em out of the other guy's eye.

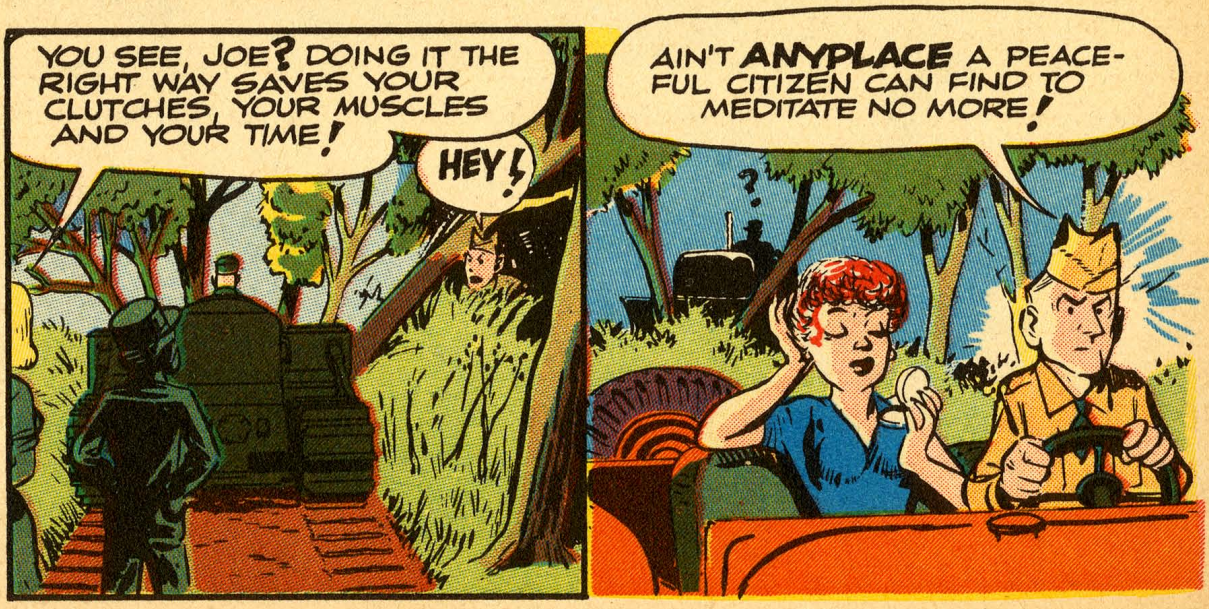
UIPMENT ... Take care of it

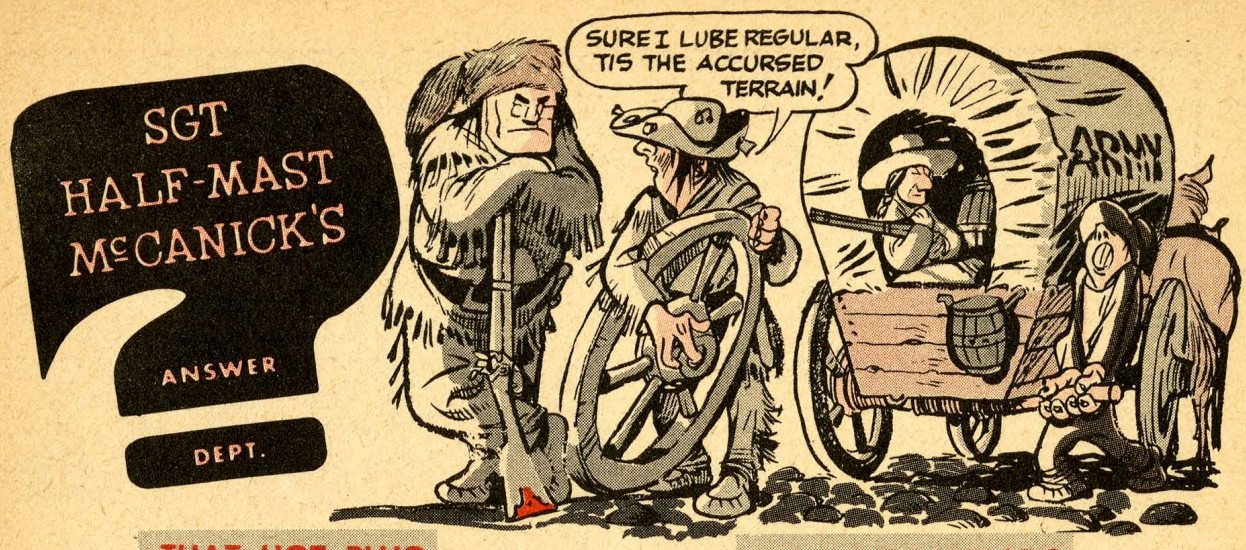
JOE'S DOPE
TIMBER TUMBLER
CLEARING AN AREA'S NO PROBLEM WHEN IT'S DONE RIGHT! WATCH SGT. DOZER OPERATE....
BRUSH AND SMALL TREES
1ST AND 2ND GEARS BEST FOR THIS!
1 LOWER BLADE A FEW INCHES INTO GROUND TO CLIP OFF ROOTS
2 TO CLEAR BLADE AND KEEP IT FROM SLIDING OVER ROOTS . . . BACK UP AND BORE IN AGAIN.
TREES 4 TO 10 INCHES
TIME: 3 MINUTES
1 BLADE HIGH AND CENTERED ON TREE FOR BEST LEVERAGE
2 CONTACT TREE GENTLY.
WATCH OUT FOR WIDOW-MAKERS
LOWER BLADE INTO GROUND . . . AND DOZE OVER ROOTS AND TREE SO THEY'RE COMPLETELY CLEAR
PUSH A FEW TIMES AT HALF THROTTLE
KEEP EYES UP
DON'T PUSH TOO LONG AT ONE TIME—SPINNING WASTES EFFORT


TREES LARGER THAN
10 INCHES
TIME:
5-20
MINUTES
FIRST OF ALL YOU DECIDE WHICH WAY SHE'S GONNA FALL....
2 MAKE A COUPLE OF RUNS ON THE OPPOSITE SIDE TO CUT LARGER ROOTS
3 CLEAR THIS SIDE
2 FEET DEEP
DIRECTION OF FALL . . .
DON'T CLEAR THIS SIDE
4 CLEAR THIS SIDE
5 BUILD AN EARTH RAMP UP STARTING SIDE OF TREE . . . WHEN YOU REACH THE NECESSARY HEIGHT AND LEVERAGE, PUSH 'ER OVER


ONCE SHE STARTS TO GO OVER... REVERSE IN A HURRY!
REEK
FLYING ROOTS AIN'T GENTLE!


FINALLY, YOU LIFT THE ROOT SECTION CLEAR...AND FILL IN THE STUMP HOLE.
IT'S A GOOD IDEA TO CHECK THE DOZER'S BLADE FOR REINFORCEMENT. THE TRUNNION PLATES SHOULD BE REINFORCED, TOO...THIS'LL KEEP THE TRUNNION'S BLOCK FROM GETTING SHEARED.*
* As listed in MWO ENG 3092-1 3 July 1946


YOU SEE, JOE? DOING IT THE RIGHT WAY SAVES YOUR CLUTCHES, YOUR MUSCLES AND YOUR TIME!
HEY!
AIN'T ANYPLACE A PEACEFUL CITIZEN CAN FIND TO MEDITATE NO MORE!



THAT HOT PLUG

Dear Half-Mast,

What stock number can we use to get hotter spark plugs for our M42 ¾-ton command trucks? We do lots of idling on these trucks to use our radios, and the H004-7524258 plugs keep fouling out.

WOJG L. M. DeS.

Dear Mister L. M. DeS.,

You can draw the optional plug listed in your Ord 7 SNL G-741 (Nov 1953) on page 17, the second line item on the page—Ord Stock No. H004-8357724, or Ord Part No. 8357724. This is a hotter plug.

These plugs are listed as "optional" for the M42, M37, M38A1 and M34. They are not optional for the M38 and M135. However, if you have a well-worn engine which is fouling plugs and you can't get it changed, your Ordnance unit can authorize a set of the hot plugs for these vehicles too, pending a new engine.

Half-Mast

SHAFT LEAKING?

Dear Half-Mast,

An oil leak in the traversing mechanism of our M41A1 tank is slowly driving us mad. It leaks around the commander's control-lever behind the hand-wheel assembly. We have to keep mopping up every time we operate. What gives?

Sgt H. A. L.

Dear Sgt H. A. L.,

When that oil gets warmed up it creates air pressure and something's got to give. So your oil seeps through the assembly. Some GAA grease around the shaft will give you some relief. In the meantime, watch for a modification work order which is on the way to fix things up.

Half-Mast

STOP, IDLER—

Dear Half-Mast,

Our M46 and M47 tanks have the compensating-idler-wheels between the sprocket and rear road-wheel. There's a stop mounted on the idler-arm-housing.

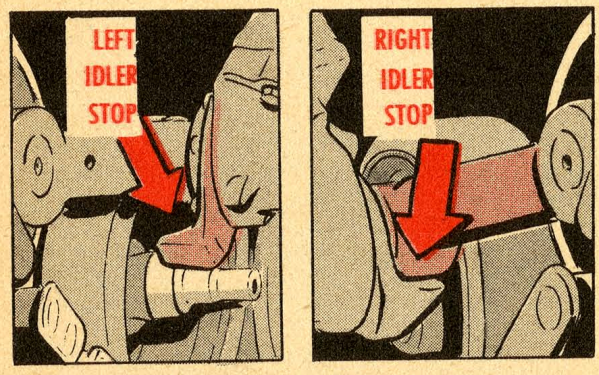
It stops the arm before the idler pushes forward enough to hit the road-wheel.

The stops on both sides look like they do the same job, but they're not the same shape. One on the left side's rectangular; on the right side it's triangle-shaped. Are these two parts interchangeable?

S/Sgt S.L.G.

Dear S/Sgt S.L.G.,

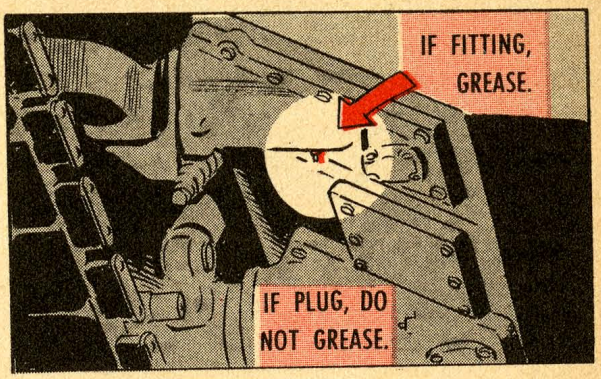
They do the same job on both sides, all right—but they're not interchangeable. That's why the shape's different—to help you tell 'em apart.



The stop is part of the compensating-idler-wheel-arm-retainer. Here's the way they come:

Ord Stock No.	Description
G262-7354658	RETAINER, **left** compensating-idler-wheel-arm (use w/SLEEVE 7354783).
G244-7524262	RETAINER, **left** compensating-idler-wheel-arm (use w/BEARING 710257 and SPACER 7722839).
G262-7354659	RETAINER, **right** compensating-idler-wheel-arm (use w/SLEEVE 7354783).
G244-7524261	RETAINER, **right** compensating-idler-wheel-arm (use w/BEARING 710257 and SPACER 7722839).

If your buggy's got the idler-arm needle-bearings (710257), it should also have a grease-fitting on the arm-support-housing. If it's one what's got the nylon sleeves, then instead of grease fittings y'should find plugs that're



marked on the head: NYLON. DO NOT GREASE.

So-o-o — should y'bust off a stop, or have to replace a retainer for some other reason—you'll wanta take care to order it right. Right?

Half-Mast

BET---TER TORQUE

Dear Half-Mast,

Settle a bet for me, please. I say that all your 14-mm spark plugs in the M-series trucks have got to be torqued up to between 25 and 30 foot-pounds. A buddy of mine says no—that these plugs are supposed to be put in snugly, 'cause if you put that much torque on 'em the gap setting'll change.

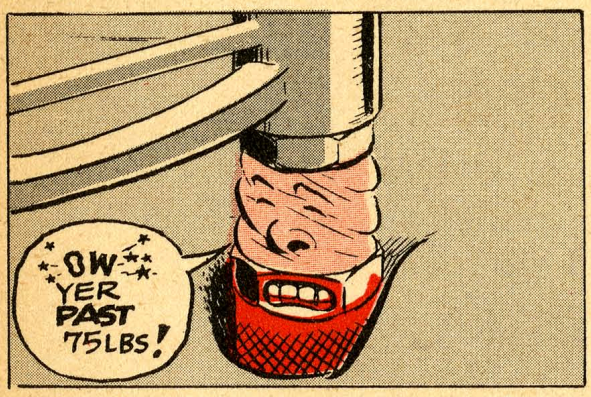
How about helping me collect?

SFC C. M. F.

Dear SFC C. M. F.,

Start collecting—you win. You can put 25 to 30 foot-pounds on your 14-mm spark plugs without the gap changing. This setting won't change until you get up to between 50 and 55 foot-pounds. Then, the plug starts to twist and the gap gets wider. The breaking point of these plugs is about 75 foot-pounds.

While we're on the subject of torque wrenches, you'll notice that most truck TM's don't give torque settings for plugs. Why? It's simple—a lot of outfits don't have torque wrenches and some plugs are in mighty awkward places.



So, if you have a torque wrench, get it out and start torquing. Go as high as 30 foot-pounds for 14-mm, but **not over.** If you don't have one, follow the instructions in your TM.

For more info on torquing—and spark plugs in general—see TB Ord 313.

Half-Mast

ORD OR ENG?

Dear Half-Mast,

Is Ordnance responsible for maintenance and supply support of those battery chargers listed in SB 9-1 (12 Nov 54)?

If the 17-C-9635 charger is a mission item of Engineers, and Ordnance issues it, who maintains it?

Capt G. W. G.

Dear Capt G. W. G.,

That charger is no longer a 17-C-9635 charger. SR 700-51-131, page 13, item 48 changed that.

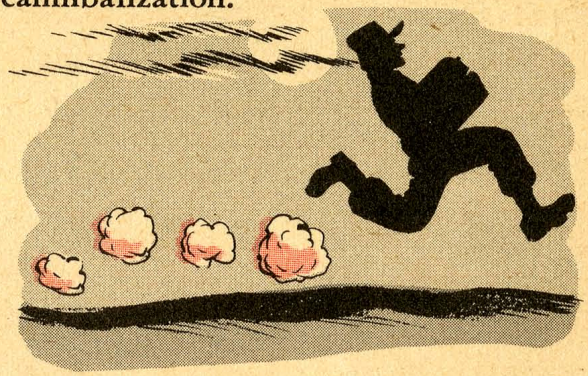
It's now the Engineers' baby. They call it a Charger, battery, portable, skid mounted, gasoline driven, 15-volts, 2000-watts, Onan model OTC-33B, w/carrying case. The Engineer Stock No. is 17-2807.200.550.

It's listed in the supply manuals as Category of Issue Code 8 with Spare Parts Support Code V.

Code 8 means that items are the logistical responsibility of the Corps of Engineers and are parts of a set, kit or assemblage of another technical service. In the case of this charger, the initial issue is made by Ordnance but when you need replacement parts, you get them from the Engineers.

Code V in this case means you can get certain parts while they last. After they're gone no new part will be stocked.

This charger is nonstandard and spare parts are no longer made. If you need spare parts you'll have to get them by local procurement, fabrication or cannibalization.

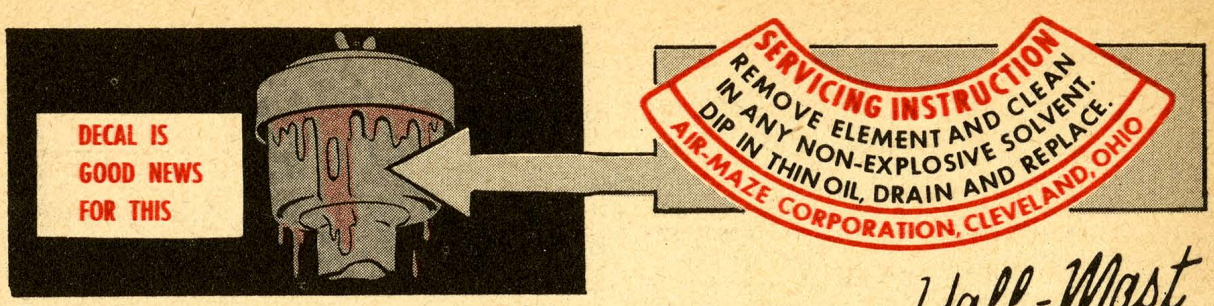


Half-Mast

A CHANGE OF PACE

Dear Half-Mast,

What's the poop on the oil-filter breather-assembly on the Fageol F-32-F bus? Seems that the oil overflows and runs out when the engine's running and



Half-Mast

the breather is filled to the oil-level in the filler-cup. What gives?

Sgt R. S. T.

Dear Sgt R. S. T.,

A change gives. Up to now the breather-assembly has been filled with oil. As the oil got hot, it expanded—and overflowed.

That's all changed now. You get better crankcase ventilation with just a thin film of oil on the filler-element. And there's no loss of breather-filler efficiency —and no overflow.

Here's how to make the changeover: Drain all the old oil out of the assembly. Remove the filler-element and clean it with volatile mineral spirits. (Eng Stock No. 52-7879.700.-700). Make sure all the old oil is cleaned off the element. Then, dip the element in OE10, drain thoroughly and put it back into the assembly. A TB will be published on this.

So you won't forget, type the changeover instructions out and tape them to

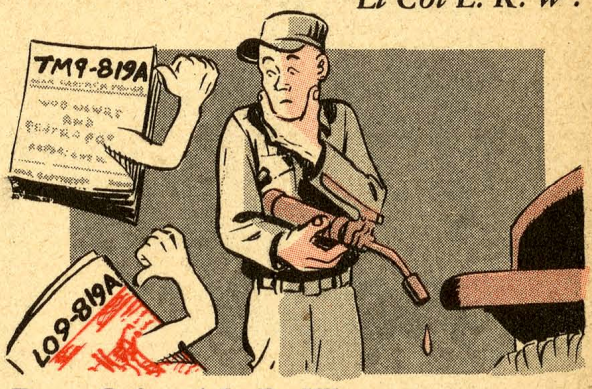
the outside of the assembly. Or, if you want a decal giving these instructions, write the Twin Coach Service Division, Kent, Ohio, for Part Number A-15346.

THAT'S OIL, BROTHER

Dear Half-Mast,

TM 9-819A says to use oil, lubricating, light (LO) when lubing the brake-power-unit of the 2½-ton, 6x6, M135 or M211. LO 9-819A says to use oil, hydraulic, petroleum base (OHA) for the same purpose. What's correct?

Lt Col L. R. W.



Dear Colonel L. R. W.,

Well, Sir . You're right as far as TM 9-819A and LO 9-819A are concerned. But soon there isn't going to be any LO 9-819A. The whole thing has been revised.

The new lube order for the M135 and M211, which'll go under the title of LO 9-8024, tells you to use OHC (oil, preservative, hydraulic equipment) in your brake-power-unit. This is the gospel. OHC contains preservative qualities which OHA (oil, hydraulic, petroleum) doesn't.

Now to answer your question about the apparent mixup in TM 9-819A and LO 9-819A. TM 9-819A, dated July 1951, doesn't lay down any specific oil to use when lubing the brake-power-units of the M135 and M211. LO is a general classification for any lubricating oil.

Before LO 9-819A came out in October 1952, any light lubricating oil could be used in the brake-power-unit as long as it had a petroleum base LO 9-819A gave you a specific oil to use. This was OHA.

Now, of course, the oil you'll be using in your brake-power-units is OHC.

Half-Mast

POWER PACK IN—OR OUT?

Dear Half-Mast,

We've been getting some of the light tank series (M42's, M41's, M75's) and ran across some fouled plugs and carburetor troubles.

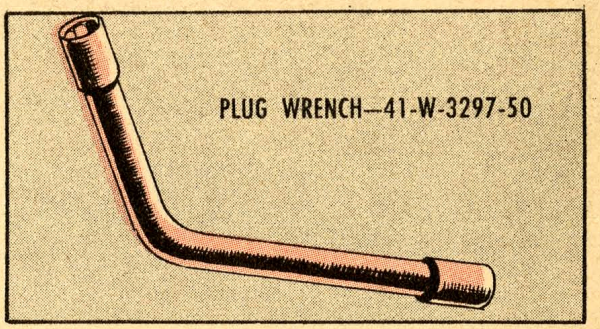
TM 9-761A says that the M42 carbs can be removed without pulling the power pack. But we found we have to pull it, in order to get at 'em. Same with the spark plugs.

Are there any special tools in the system which permit performing these operations with the engine in the vehicle?

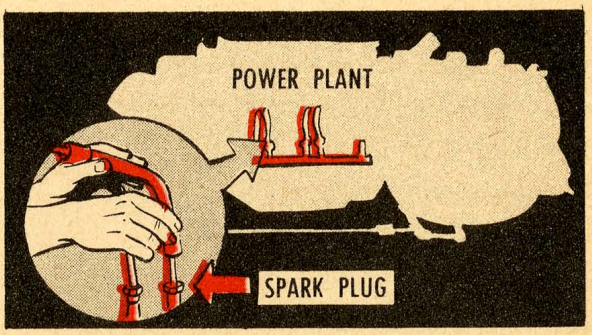
Mr. J. F. M.

Dear Mr. J. F. M.,

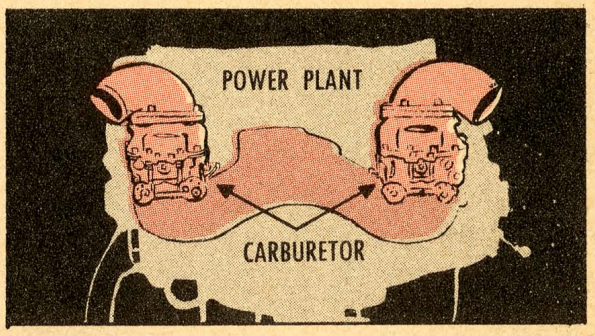
The new double-end tubular plug wrench, Ord Stock No. 41-W-3297-50, (there's a modified version on the way) makes pulling plugs a lot easier—'specially on medium tanks.



But on those light tanks—with the oil coolers overhead—it'd still take something of a contortionist to get the plugs out with the power pack in. Most



people find it best to pull the pack and get an open shot at the plugs—even with the new persuader.



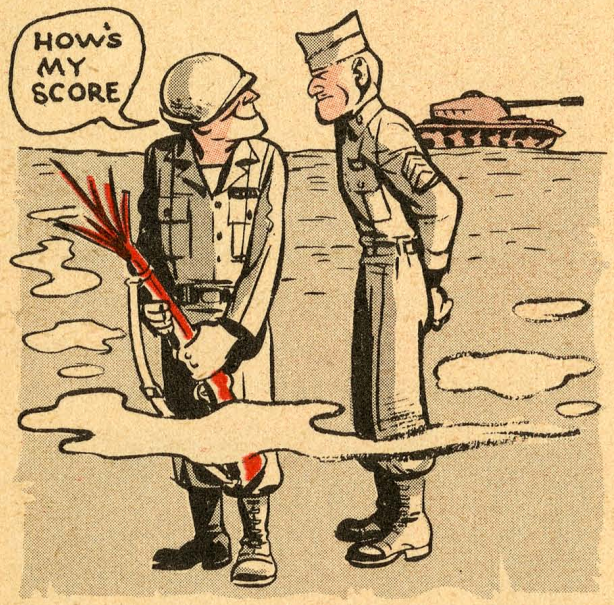
On carb removal, the power unit must come out—'specially for making the linkage adjustments. You'll see the correction in the new TM 9-7218, when it's ready.

Half-Mast

HOLD YOUR FIRE!

Be sure you've got the right gas-cylinder lock on your M-1 before firing rifle grenades

Before you stick that grenade on your M7A2 or M7A3 launcher, better make sure you've got the right gas-cylinder lock on your rifle. If you haven't, chances are your rifle will get roughed up worse than the target.

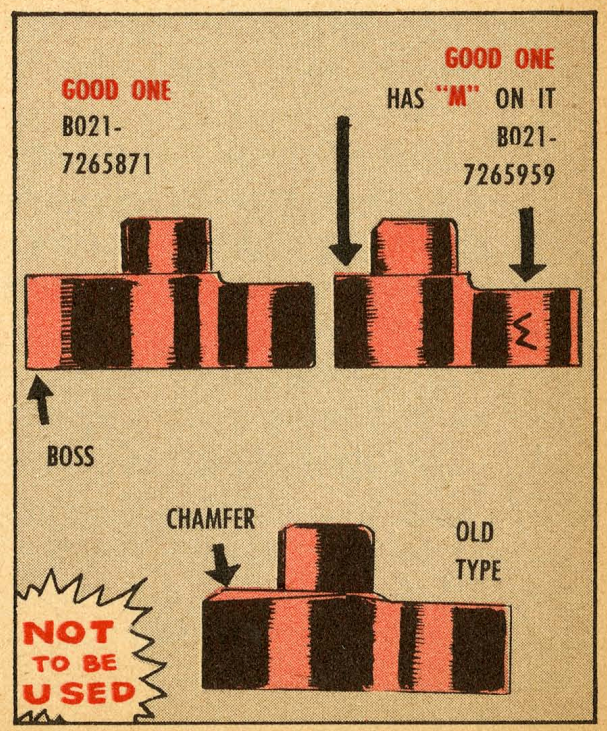


They're only two types of gas-cylinder locks to be used on the M1 rifle when firing grenades with the M7A2 or M7A3. You were supposed to get one or the other when you were issued your launcher.

One of 'em (Ord Stock No. B021-7265871) has a big boss or hump on its head. The other one (Ord Stock No. B021-7265959) has an "M" stamped on it for easy recognition. It doesn't have a chamfer on the front face of the upper half of the lock like the old type does.

If your gas-cylinder lock has neither a head nor an "M" on it, don't fire any grenades. It'll burr your muzzle. If you're supposed to be carrying a launcher, trade your old lock in for the right kind. If you're just firing for practice, borrow the right lock from a buddy.

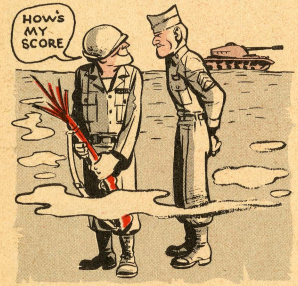
Could be that your lock has an "H" stamped on it. This means that it has been hardened, but it still isn't to be used with the M7A2 or A3.



HOLD YOUR FIRE!

Be sure you've got the right gas-cylinder lock on your M-1 before firing rifle grenades

Before you stick that grenade on your M7A2 or M7A3 launcher, better make sure you've got the right gas-cylinder lock on your rifle. If you haven't, chances are your rifle will get roughed up worse than the target.

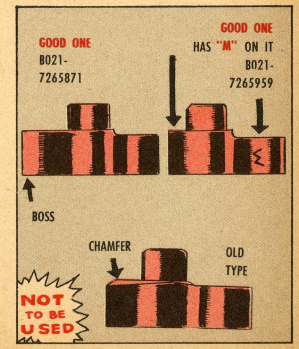


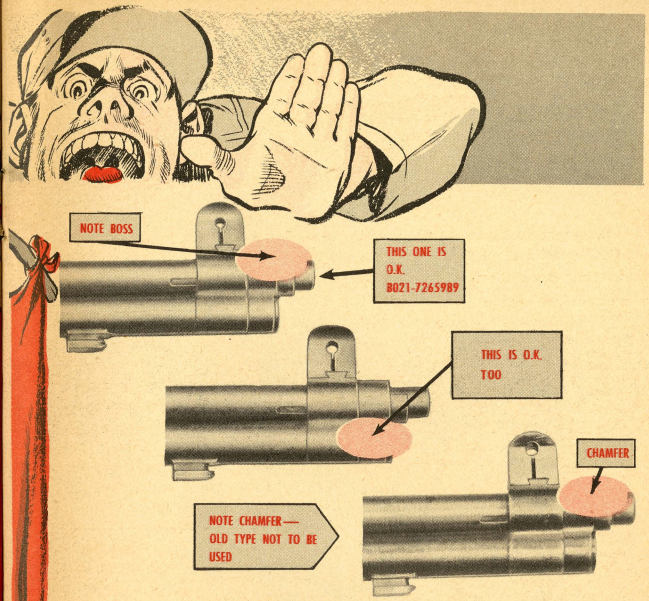
They're only two types of gas-cylinder locks to be used on the M1 rifle when firing grenades with the M7A2 or M7A3. You were supposed to get one or the other when you were issued your launcher.

One of 'em (Ord Stock No. B021-7265871) has a big boss or hump on its head. The other one (Ord Stock No. B021-7265959) has an "M" stamped on it for easy recognition. It doesn't have a chamfer on the front face of the upper half of the lock like the old type does.

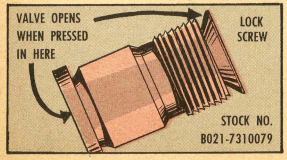
If your gas-cylinder lock has neither a head nor an "M" on it, don't fire any grenades. It'll burr your muzzle. If you're supposed to be carrying a launcher, trade your old lock in for the right kind. If you're just firing for practice, borrow the right lock from a buddy.

Could be that your lock has an "H" stamped on it. This means that it has been hardened, but it still isn't to be used with the M7A2 or A3.

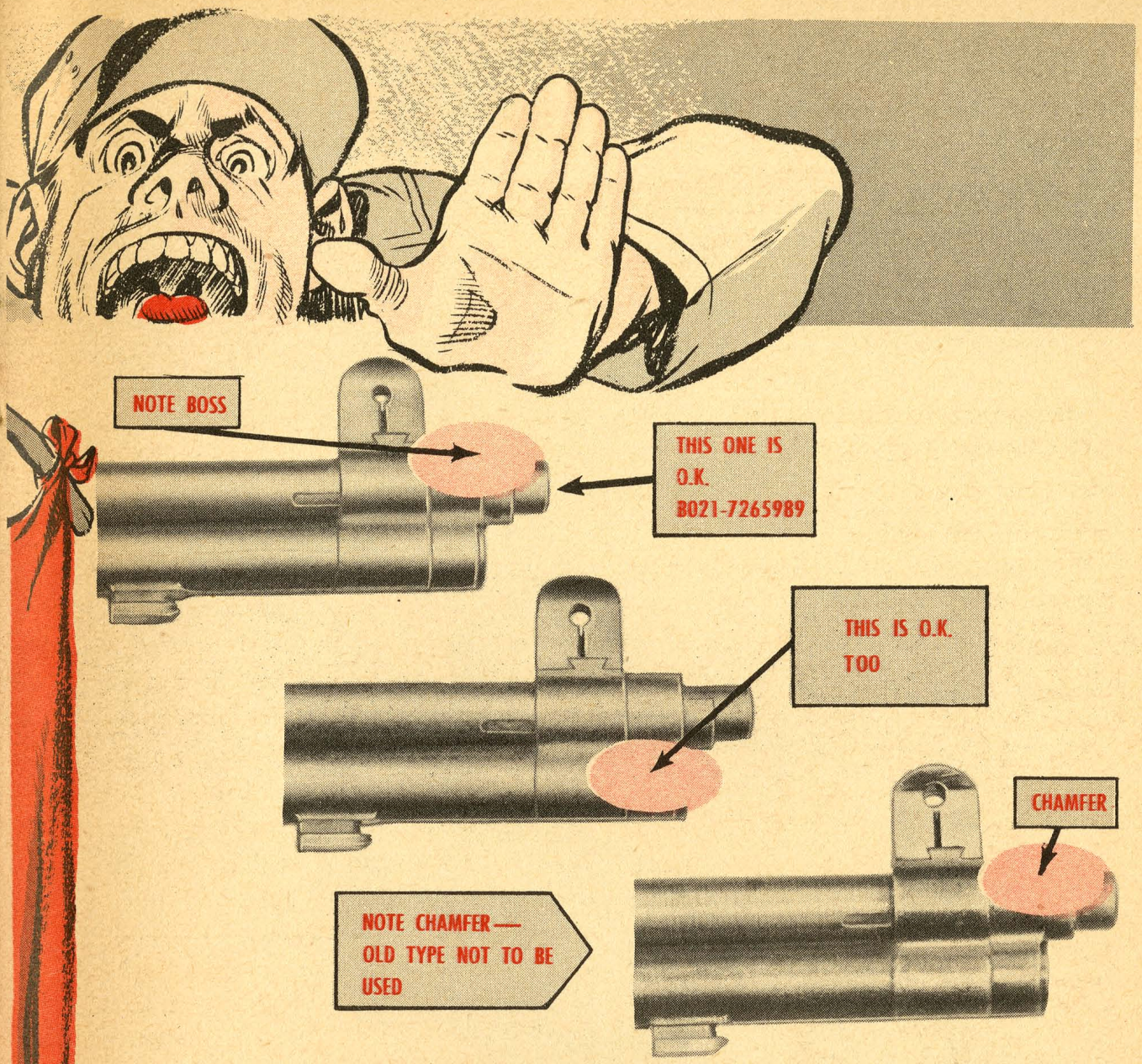




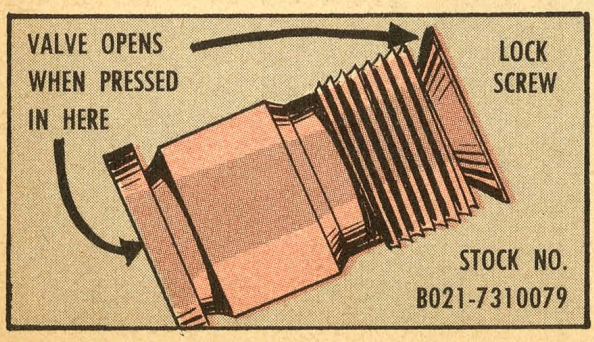
Just one more thing. Take out your gas-cylinder-lock screw for a fast look. If it has a valve-assembly, you're cooking with gas. If it's the solid-type plug with no valve, hold everything. Trot over to supply and trade it in for Screw, gas-cylinder lock w/valve, assy, Ord Stock No. B021-7310079. And you're all ready to blast away at the countryside.



By the way, that new-type grenade launcher and leaf sight shown in Change 2 of FM 23-30 and TB Ord 404, changes 1, 2 and 3, is still under development and won't be available for a while. So carry on, man, carry on.



Just one more thing. Take out your gas-cylinder-lock screw for a fast look. If it has a valve-assembly, you're cooking with gas. If it's the solid-type plug with no valve, hold everything. Trot over to supply and trade it in for Screw, gas-cylinder lock w/valve, assy, Ord Stock No. B021-7310079. And you're all ready to blast away at the countryside.



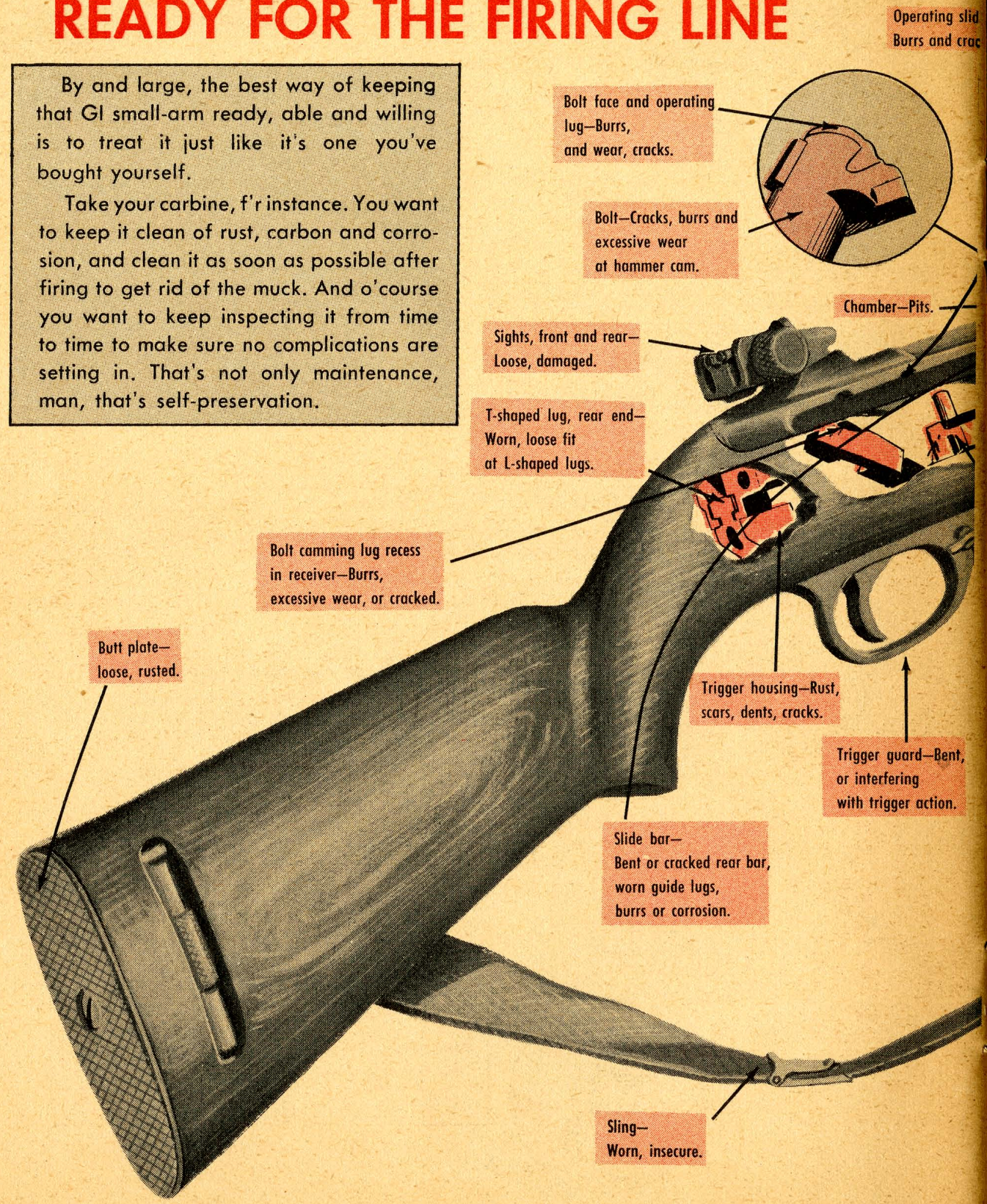
By the way, that new-type grenade launcher and leaf sight shown in Change 2 of FM 23-30 and TB Ord 404, changes 1, 2 and 3, is still under development and won't be available for a while. So carry on, man, carry on.

NIX ON THESE ... to keep your carbine...

READY FOR THE FIRING LINE

By and large, the best way of keeping that GI small-arm ready, able and willing is to treat it just like it's one you've bought yourself.

Take your carbine, f'r instance. You want to keep it clean of rust, carbon and corrosion, and clean it as soon as possible after firing to get rid of the muck. And o'course you want to keep inspecting it from time to time to make sure no complications are setting in. That's not only maintenance, man, that's self-preservation.

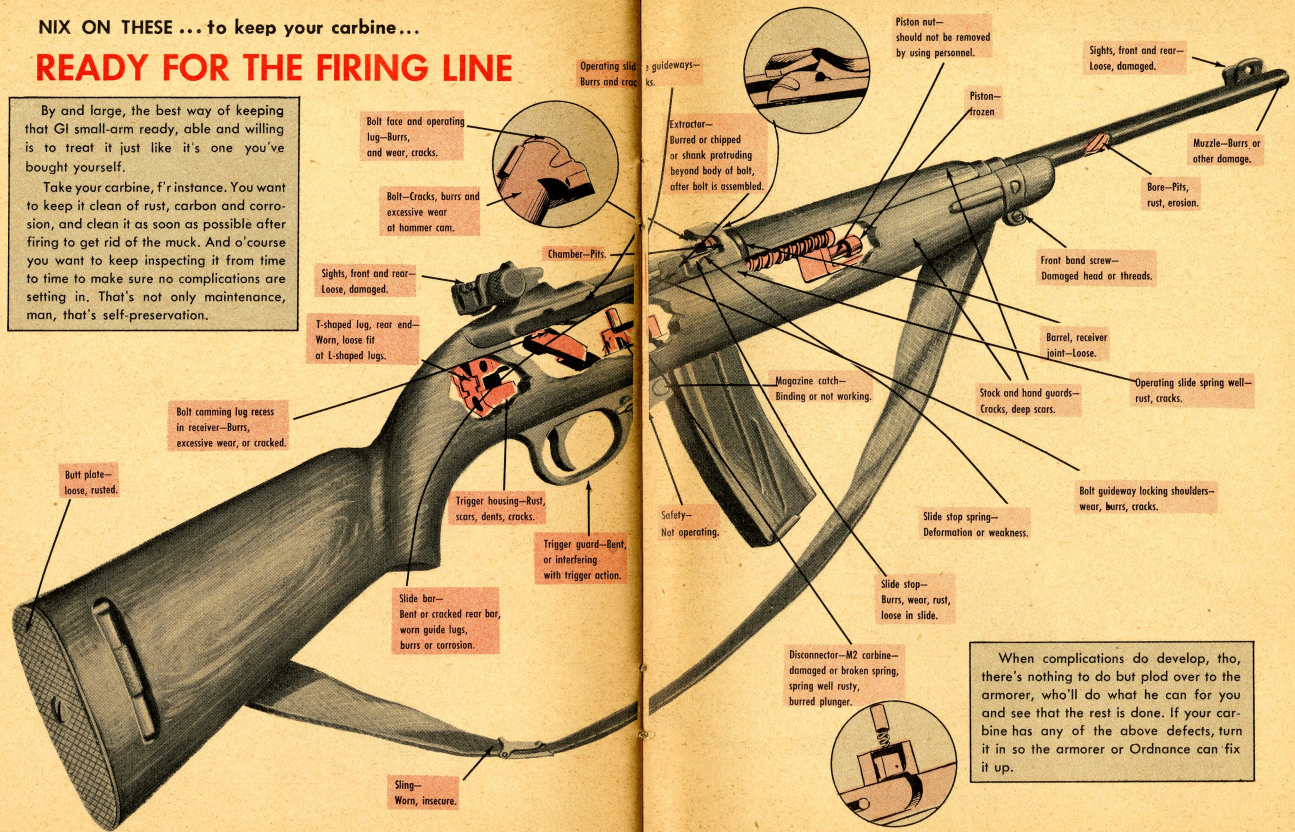


NIX ON THESE ... to keep your carbine ...

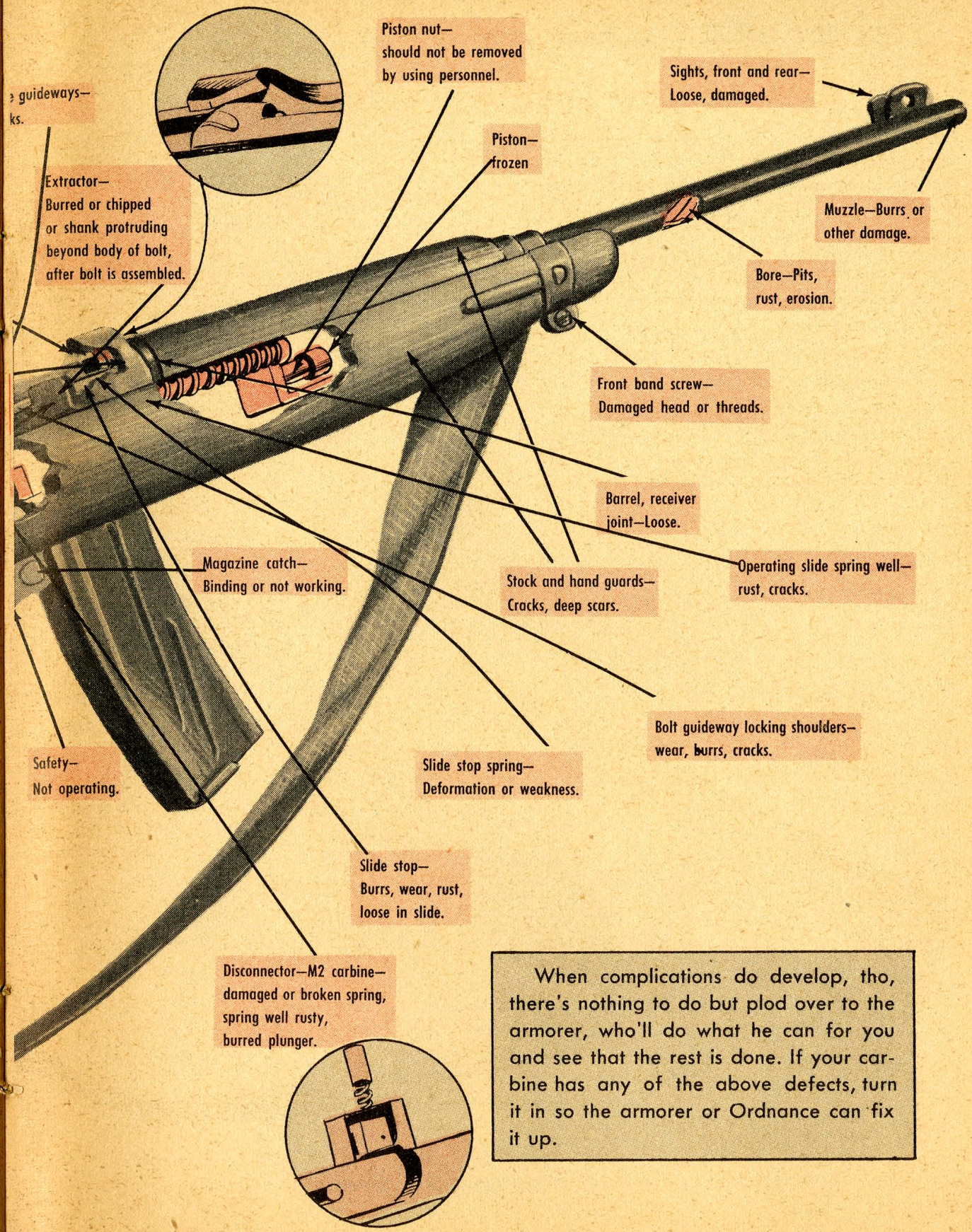
READY FOR THE FIRING LINE

By and large, the best way of keeping that GI small-arm ready, able and willing is to treat it just like it's one you've bought yourself.

Take your carbine, f'r instance. You want to keep it clean of rust, carbon and corrosion, and clean it as soon as possible after firing to get rid of the muck. And o'course you want to keep inspecting it from time to time to make sure no complications are setting in. That's not only maintenance, man, that's self-preservation.

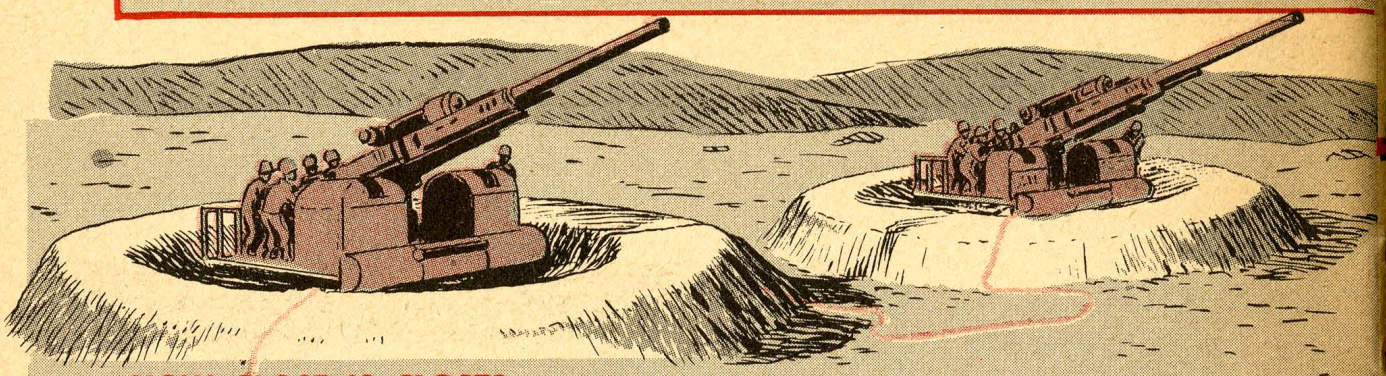


When complications do develop, tho, there's nothing to do but plod over to the armorer, who'll do what he can for you and see that the rest is done. If your carbine has any of the above defects, turn it in so the armorer or Ordnance can fix it up.



When complications do develop, tho, there's nothing to do but plod over to the armorer, who'll do what he can for you and see that the rest is done. If your carbine has any of the above defects, turn it in so the armorer or Ordnance can fix it up.

FOR MEN WHO WO



HOW CLOSE IS CLOSE?

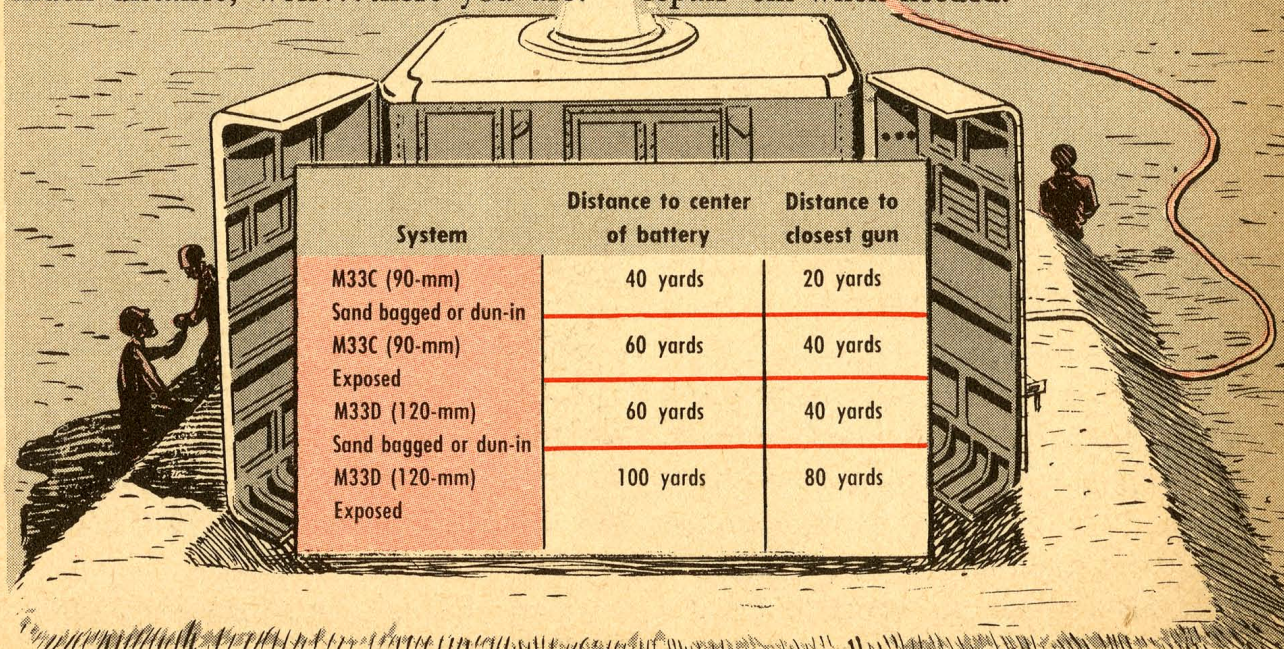
Getting the right amount of distance between your M33 fire control system and the guns can be a pretty simple job —or it can be a real pain in the posterior. It all depends upon the terrain and situation, as the tactics books say.

The following chart will give you an idea of the distance you should have between the FCS and the gun mounts at your emplacement. These are more or less minimum distances, so if you can stretch 'em out longer, so much the better. And if your site won't permit this much distance, well... there you are!

The whole idea is to protect the FCS and personnel from the muzzle blasts and concussion of the guns, and to give you tactical dispersion, as they say in the books.

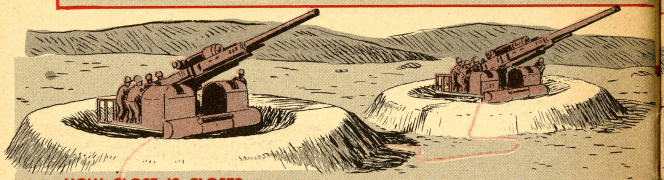
The condition of the soil at the site also has a lot to do with the amount of vibrations you get from the guns. Hard, rocky soil will carry vibrations better than soft, loose, gooey soil. So bear that in mind, too.

Even at these distances, though, the vibrations may cause some of the interlocks to open. Keep an eye on 'em and repair 'em when needed.



System	Distance to center of battery	Distance to closest gun
M33C (90-mm) Sand bagged or dun-in	40 yards	20 yards
M33C (90-mm) Exposed	60 yards	40 yards
M33D (120-mm) Sand bagged or dun-in	60 yards	40 yards
M33D (120-mm) Exposed	100 yards	80 yards

FOR MEN WHO WO



HOW CLOSE IS CLOSE?

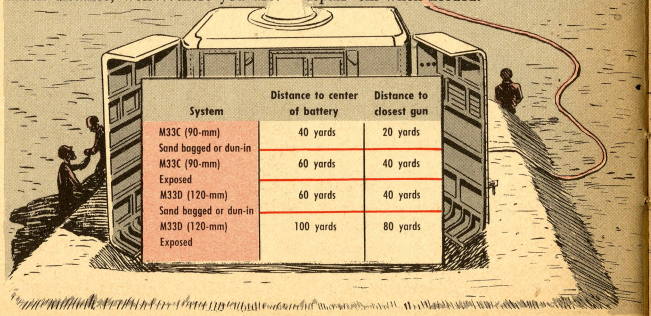
Getting the right amount of distance between your M33 fire control system and the guns can be a pretty simple job —or it can be a real pain in the posterior. It all depends upon the terrain and situation, as the tactics books say.

The following chart will give you an idea of the distance you should have between the FCS and the gun mounts at your emplacement. These are more or less minimum distances, so if you can stretch 'em out longer, so much the better. And if your site won't permit this much distance, well... there you are!

The whole idea is to protect the FCS and personnel from the muzzle blasts and concussion of the guns, and to give you tactical dispersion, as they say in the books.

The condition of the soil at the site also has a lot to do with the amount of vibrations you get from the guns. Hard, rocky soil will carry vibrations better than soft, loose, gooey soil. So bear that in mind, too.

Even at these distances, though, the vibrations may cause some of the interlocks to open. Keep an eye on 'em and repair 'em when needed.

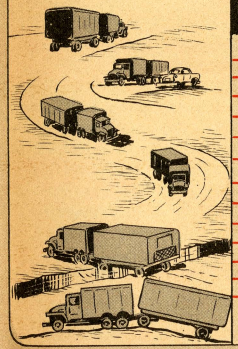


System	Distance to center of battery	Distance to closest gun
M33C (90-mm) Sand bagged or dun-in	40 yards	20 yards
M33C (90-mm) Exposed	60 yards	40 yards
M33D (120-mm) Sand bagged or dun-in	60 yards	40 yards
M33D (120-mm) Exposed	100 yards	80 yards

RK THE M33 FCS:

SPEED VERSUS TERRAIN

Men who know those trailers best say these are the safe maximum speeds when you're heaving an M242 trailer:



Type of road	Condition	Recommended maximum speed
Highway	Straight Road	40-MPH
Highway	Passing other vehicles	35-MPH
Highway	300 ft. radius curve	30-MPH
Highway	250 ft. radius curve	25-MPH
Highway	sharp turns	10-MPH
Secondary	Straight road, crowned	35-MPH
Secondary	Passing other vehicles	30-MPH
Secondary	300 ft. radius curve	25-MPH
Secondary	250 ft. radius curve	20-MPH
Secondary	Sharp turns	7-MPH
Cross-country	Straight, flat	15-MPH
Cross-country	250-300 ft. radius curve	10-MPH
Cross-country	Sharp turns	5-MPH
Ditches and similar obstructions	Cross perpendicular to obstruction	Minimum possible; check for undercarriage clearance

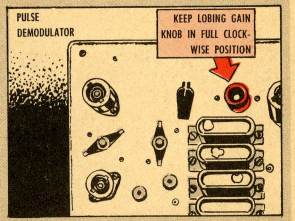
ALL THE WAY RIGHT

Drop everything (well, almost everything) and take a look at the lobing gain control on the pulse demodulator in the radar cabinet of your M33 and T33 FCS. It should be turned to the extreme clockwise position to get the best results from your servo system.

However, if other parts of the servo system are not adjusted right, automatic tracking may become rough and jittery when R112 is turned to the extreme clockwise position.

If this happens, go over the entire demodulator like it says in para 152g of TM 9-6092-1 and the servo amplifiers as called for in the monthly log book checks.

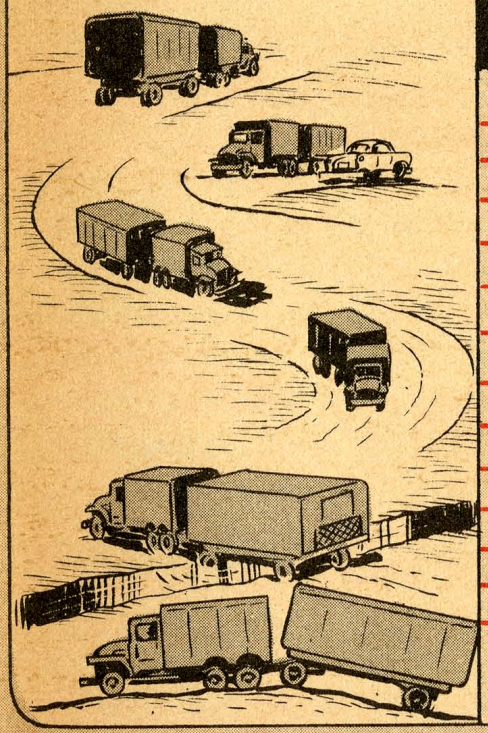
If you still get rough tracking, call Ordnance.



RK THE M33 FCS:

SPEED VERSUS TERRAIN

Men who know those trailers best say these are the safe maximum speeds when you're heaving an M242 trailer:



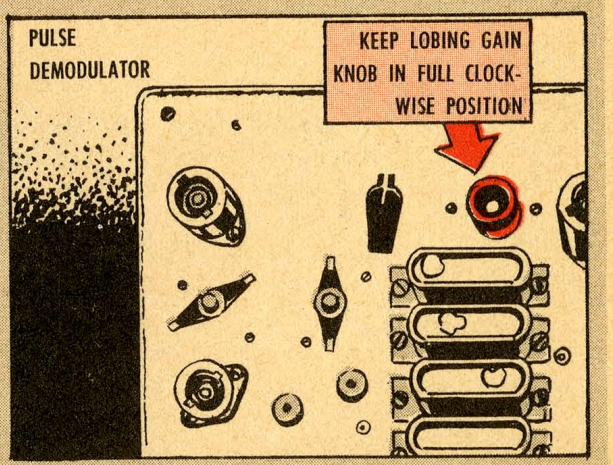
Type of road	Condition	Recommended maximum speed
Highway	Straight Road	40-MPH
Highway	Passing other vehicles	35-MPH
Highway	300 ft. radius curve	30-MPH
Highway	250 ft. radius curve	25-MPH
Highway	sharp turns	10-MPH
Secondary	Straight road, crowned	35-MPH
Secondary	Passing other vehicles	30-MPH
Secondary	300 ft. radius curve	25-MPH
Secondary	250 ft. radius curve	20-MPH
Secondary	Sharp turns	7-MPH
Cross-country	Straight, flat	15-MPH
Cross-country	250-300 ft. radius curve	10-MPH
Cross-country	Sharp turns	5-MPH
Ditches and similar obstructions	Cross perpendicular to obstruction	Minimum possible; check for under-carriage clearance

ALL THE WAY RIGHT

Drop everything (well, almost everything) and take a look at the lobing gain control on the pulse demodulator in the radar cabinet of your M33 and T33 FCS. It should be turned to the extreme clockwise position to get the best results from your servo system.

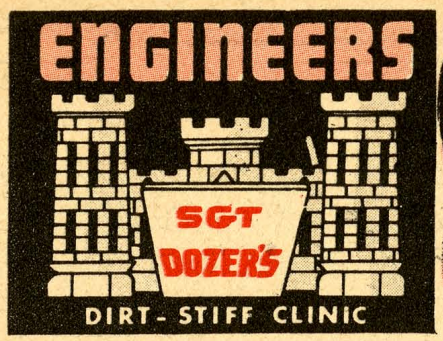
However, if other parts of the servo system are not adjusted right, automatic tracking may become rough and jittery when R112 is turned to the extreme clockwise position.

If this happens, go over the entire demodulator like it says in para 152g of



TM 9-6092-1 and the servo amplifiers as called for in the monthly log book checks.

If you still get rough tracking, call Ordnance.



SPUTTERIN' PONY ENGINE

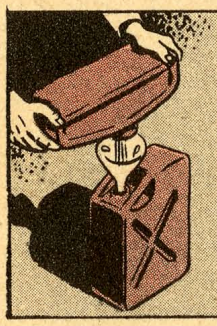
Dear Dozer,

I'm a D4 operator and have a lot of trouble with water getting in the pony engine's gas tank. I have to drain the gas every three or four days. It's a bother and a waste. What's wrong?

PFC A. C.

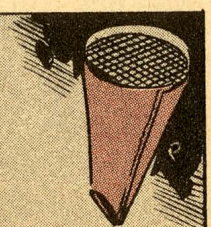
Dear PFC A. C.,

Look to your gasoline storage set-up first. Two to one you're feeding your pony from drums that get stored outdoors and aren't tightly sealed. They can easily gather enough rain water to foul up the gasoline. Take a look at para 83 in TM 5-505 for all the dope on storing and handling fuel.

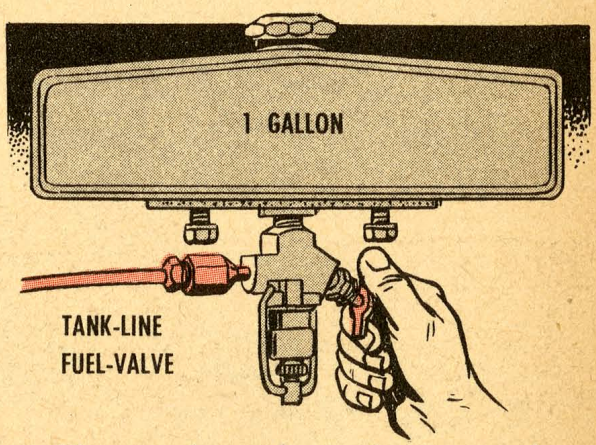


FIRST, REMOVE GAS TANK AND DRAIN IT COMPLETELY. THIS IS A JOB FOR YOUR ORGANIZATIONAL MECHANIC. IT'S A GOOD IDEA TO STRAIN THE GAS EACH TIME YOU FILL YOUR PONY'S ONE GALLON GAS TANK.

A PIECE OF BRASS STRAINER CLOTH (ABOUT 120 MESH TO THE SQUARE INCH) WILL HOLD WATER BACK. USE A CLEAN, DRY CONTAINER WHEN YOU REFUEL. A BRASS STRAINER CLOTH, WELDED TO FUNNEL OF SCRAP GALVANIZED METAL MAKES A HANDY GAS STRAINER.



And, by the way, here's another tip that'll help a starting engine give better service: Always stop a pony engine by shutting off the fuel at the tank-line fuel-valve. After the engine burns all the fuel in the carburetor, then turn off the ignition switch. This way gasoline (that remains in the fuel system) won't run into the engine where it can wash oil off the cylinder walls, foul-up the spark plugs and dilute the crankcase.



You ought to keep the gas tank as nearly full as possible at all times. It'll cut down the amount of sweat (condensation) that collects in the tank's empty areas when the engine's idle. Draining the tank's sediment bowl at the weekly maintenance check usually gets rid of the normal amount of sweat that does collect.

Sgt Dozer

COOL-HEADED VIP'S

A heavy equipment operator or mechanic, like anyone else, can spend his leisure according to his wife's pleasure —as a big shot, a small shot, in baggy pants or gabardine slacks. But once on the job, he's strictly in the VIP (Very Important Person) class, coveralls and all.

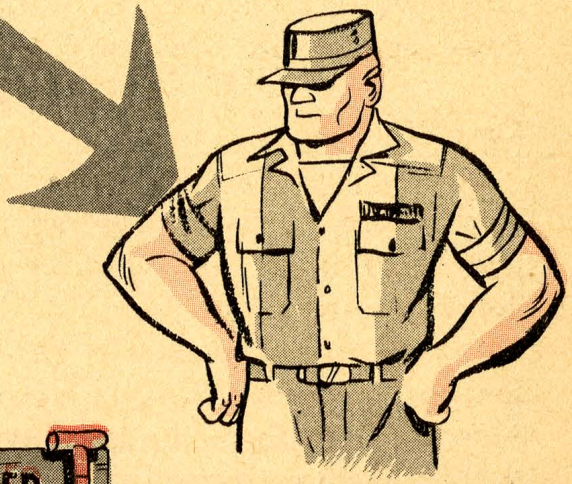
On duty he's responsible for the care and protection of more taxpayer's dough than an average crowd can scrape together in a lifetime.

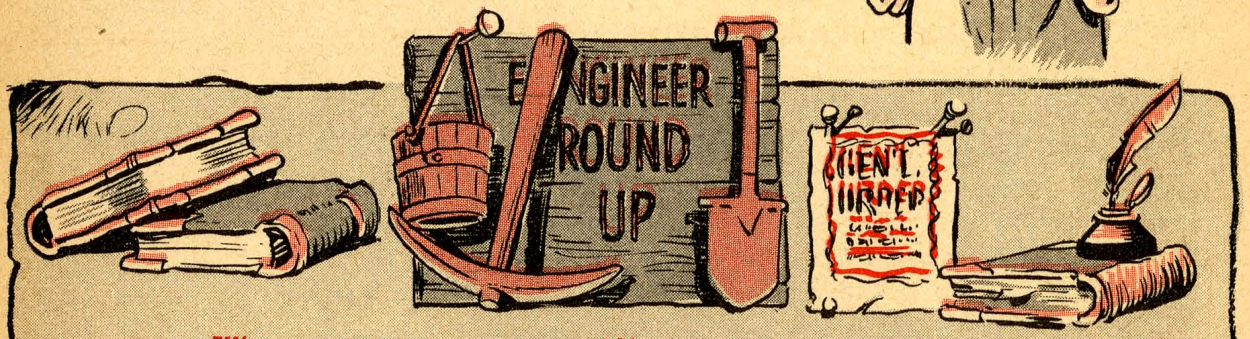
Examples: An average piece of heavy machinery costs more than most people will ever spend on automobiles. The price of only one major assembly in a piece of equipment can easily pay for a new Cadillac.

He's a man of distinction—and how.

Everytime he turns a switch, pulls a lever or lowers a boom he's responsible for tons and tons of precision-engineered power-equipment. It's the stuff used when things have to be done in a big way.

To care for and feed those big babies proper-like a man's gotta have special training and cool common sense to match the power and speed he's responsible for.





TM's

5-1222 Angledozer, Berg mod CB-500C 4 Apr 55
5-1164 Distributor, bituminous material, Rosco mod RRE Mar 55
5-2043 Pump, cent 22 Mar 55
5-4096 Drill, pneu, Chicago Pneu, Type 327-425-3, mod D 23 Mar 55
5-5143-1 Generator set, 100 KW, Stewart & Stevenson Series 15,000 28 Feb 55
5-9232 Sawmill, Jackson Lumber Harvester Rm-B & Rm-J 17 Mar 55
5-9508 Crane-shovel, Thew-Lorain mod E6620 23 Feb 55
5-3300-2 Tractor, Mod Super C Tournadozer 8 Mar 55
5-4006 Saw, woodwking, pneu, Wright mod AS-221 8 Mar 55
5-5027 Generator set, Homelite mod C-8 11 Mar 55

LO's

5-5353 Generator set, 30-KW, Consolidated mod 1905 9 Mar 55
5-9528 Truck, garbage, Sicard mod Sanivan SM-4 14 Mar 55
5-9497 Carrier, crane-shvl, Available Trk mod HC-70X 7 Mar 55
5-1312-1 Crane-shovel, Lima mod Paymaster-34 24 Feb 55
5-5316 Generator set, 5-KW, Onan WC5S & WC4-5RS 7 Mar 55
5-9192 Ice plant, 15 ton, York Mod 25 Feb 55

TB's

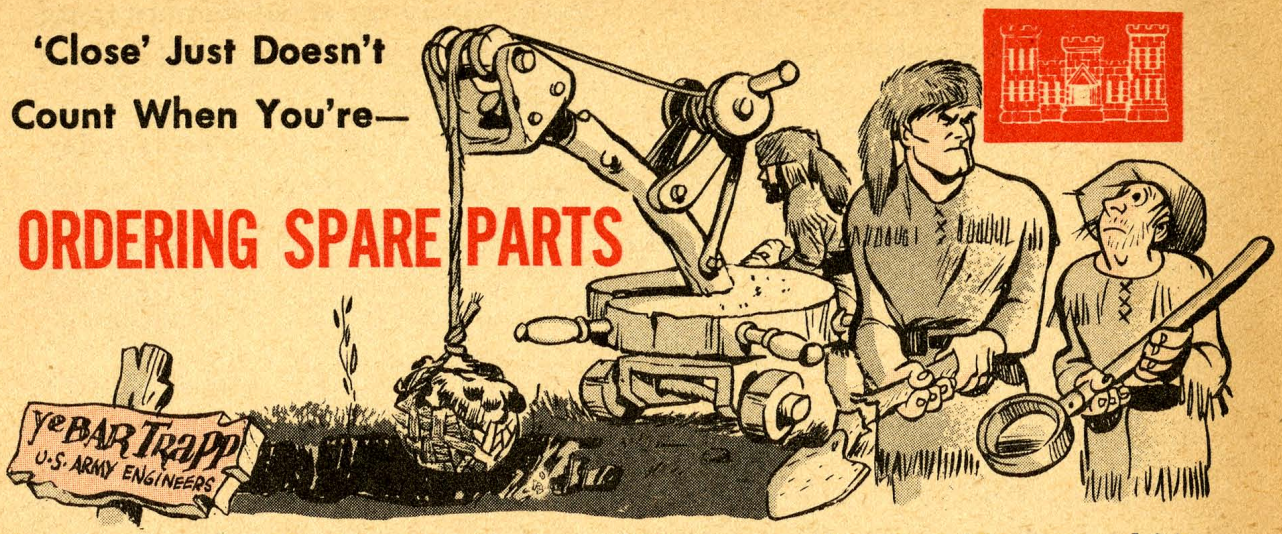
5-5245-1 Generator, stm, Orr & Sembower mod 21 Mar 55

MWO's

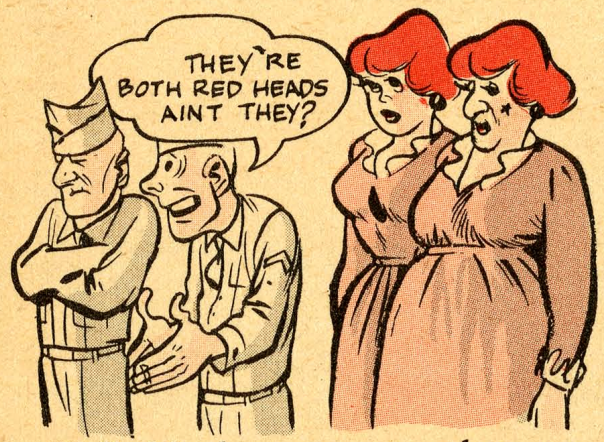
ENG 5053-3 Generator set, 30-KW, Reiner mod GGC-30AC 24 Mar 55
ENG 5006-5 Generator set, 30-KW, International Fermont M30-GCT-SH6 7 Apr 55
ENG 5072-8 Generator set, 30-KW, Hobart mod HF 30G 13 Apr 55
ENG 5042-1 Compressor, air, Chicago Pneu mod 500-PO-8 8 Apr 55
ENG 5166-1, C1 Engine, Continental mod M-330 7 Apr 55
ENG 1013-1 Grader, road, Warco mod 4D-100 29 Mar 55
ENG 1027-1 Grader, road, Austin-Western 99-H 25 Mar 55
ENG 3516-1 Truck, fire, pumper, 750-GPM, Mauk mod FN-431 25 Mar 55
ENG 9057-1 Trailer, generator, ACF Brill M-200 25 Mar 55
ENG 9211-1 Trailer, full, 60-t, Fontaine mod C-16-60-SP 25 Mar 55

'Close' Just Doesn't Count When You're—

ORDERING SPARE PARTS



When your best buddy tells you he's going to fix you up with a well-stacked redhead and then turns up with a brunette—are you disappointed? Probably not, just as long as there's no lacking on the stacking on the chassis he produces. As long as the measurements and statistics are the same, nobody's gonna kick about the color of the babe's hair.



Well, it's the same way when you order spare parts for your equipment. You've got to get the right part for the right job—and the best way to do that is to make sure you requisition by the correct part number.

Part numbers have been causing plenty of confusion when it comes to ordering clutch drive links for Caterpillar D7's and D8's. There're three different numbers for this part and it's important that you match 'em up with the serial number of the piece of equipment you're concerned with.

The original part number was 2A1025 for D7's with serial numbers up to and including 3T12822 and for D8's with serial numbers up to and including 2U10601.

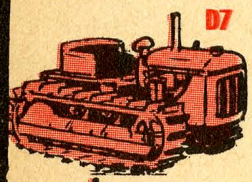
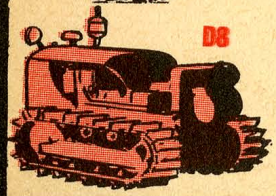
For D7's with serial numbers beginning at 3T12823 and including 3T15322, and for D8's whose serial numbers are between 2U10602 and 2U13070 inclusive, you'll need part number 6F3019 to replace the clutch drive links. This part'll also fit the early models.

On the very latest models—that's 3T15323 and up for the D7's, and 2U13071 and up for the D8's—the Part No. is 9F3358. That's the only one

that'll fit the new models. This part, however, is interchangeable on all models, so you'd be way ahead to order Part No. 9F3358 when you're gonna replace the clutch drive links on any D7 or D8.

TB ENG 170 (For the Air Force that's TO 19-75Aj-165) gives you this dope, but here's a later breakdown on the model, tractor serial number range and the part you can use on all types of this equipment:

Better check your unit stocks today. Some units are servicin' the newer models with the old type link. When you requisition this part, might as well get the one that'll fit all models. Remember, that's Part No. 9F3358.

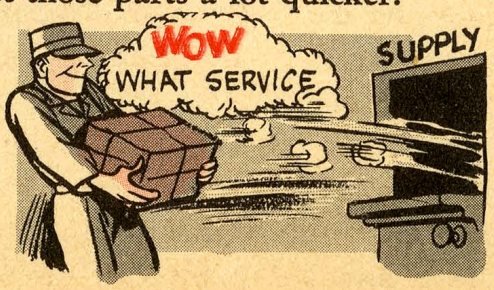
MODEL	TRACTOR SERIAL NUMBER RANGE	PART YOU CAN USE
 D7  D8	7M1 — 7M9999 3T1 — 3T12822 4T1 — 4T9999 6T1 — 6T1054 1H1 — 1H9999 8R1 — 8R9999 2U1 — 2U10601	2A1025, 6F3019 or 9F3358
D7 D8	3T12823 — 3T15322 2U10602 — 2U13070	6F3019 or 9F3358
D7 D8	3T15323 — 3T23646 2U13071 — 2U21512	9F3358

SPARE PARTS SPEED-UP

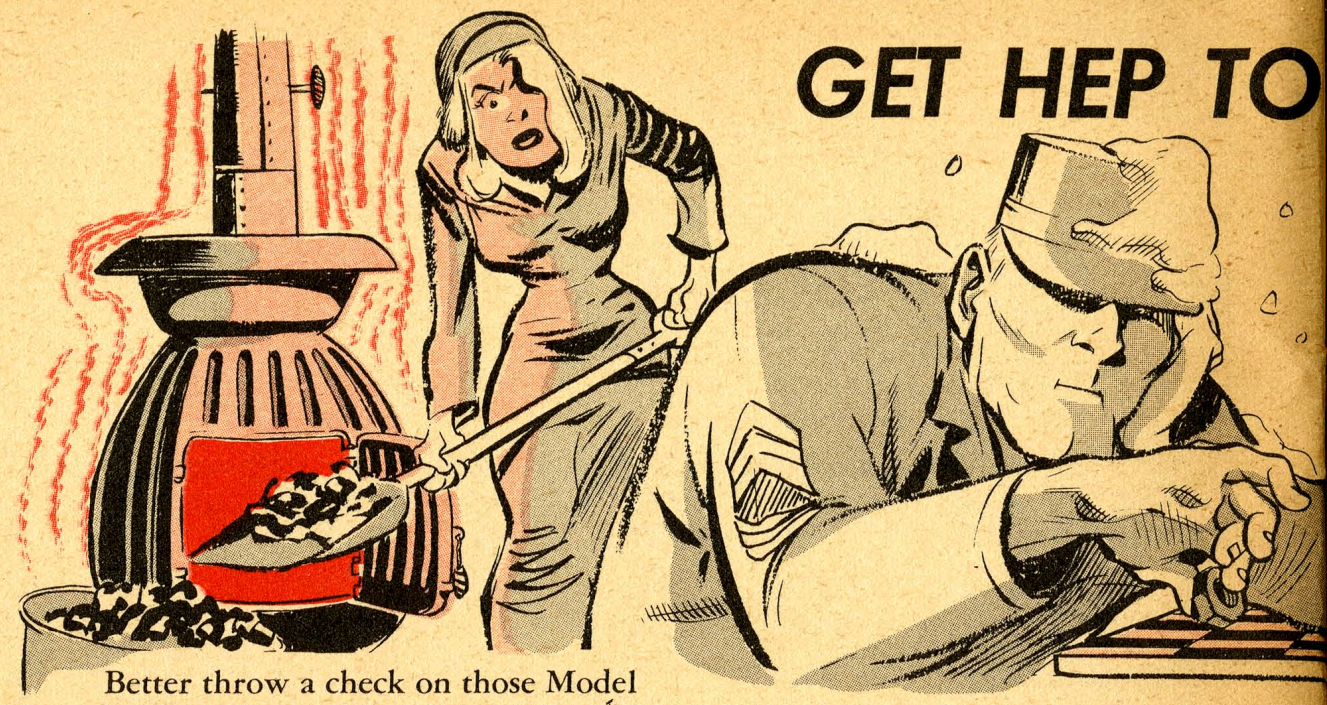
Ordering Engineer spare parts without all the information on the requisition is just like meeting a blind date on a busy corner at the evening rush hour. It's hard to tell what you'll get or how long you'll have to wait.

You'll do yourself a favor, as well as help the people who fill your requisitions, by giving 'em all the information you can. One thing a lotta people forget to do when they order parts is give the make, model and serial number of the end item.

Put this dope on all your requisitions from here on in—and see if you don't get those parts a lot quicker.



GET HEP TO



Better throw a check on those Model 460 winterization heaters made by the Perfection Stove Company (Now Perfection Industries, Inc.)

Some of 'em don't ignite right—it's all because the igniter (Part No. B1613-G2) is out of line with the wick. Take a look at Fig 1. You can see that the igniter is not located right, and the heater-element is standing at a right angle to the wick.

Now, shift your eyeballs to a shot of the bottom of the burner (Fig 2). Everything seems to be in order, but the locator-pin on the base of the igniter is out of place. That's what's causing the heater-element to stand away from the wick.

That dowel, or locator-pin, ought to be in the position like the one in Fig 3.

As a field expedient, all you do is turn the igniter-assembly to the right position and grind off the locator-pin. Get the igniter set right, tighten the clamp-

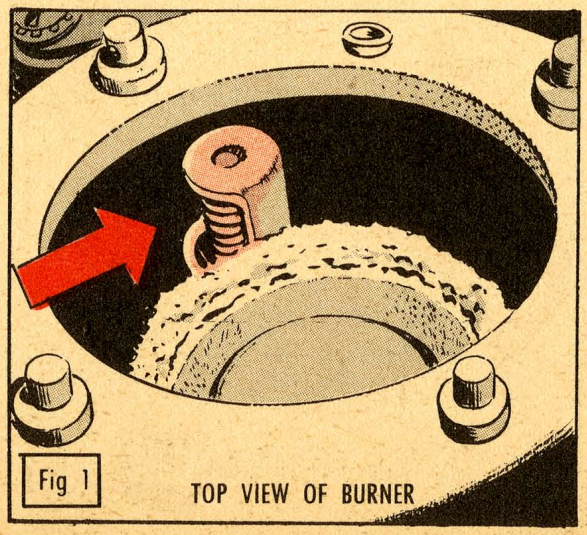


Fig 1 TOP VIEW OF BURNER

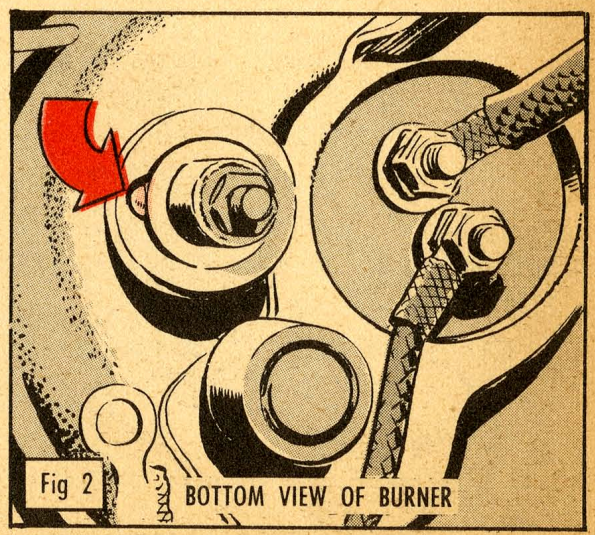


Fig 2 BOTTOM VIEW OF BURNER

GET HEP TO YOUR HEATER

Better throw a check on those Model 460 winterization heaters made by the Perfection Stove Company (Now Perfection Industries, Inc.)

Some of 'em don't ignite right—it's all because the igniter (Part No. B1613-G2) is out of line with the wick. Take a look at Fig 1. You can see that the igniter is not located right, and the heater-element is standing at a right angle to the wick.

Now, shift your eyeballs to a shot of the bottom of the burner (Fig 2). Everything seems to be in order, but the locator-pin on the base of the igniter is out of place. That's what's causing the heater-element to stand away from the wick.

That dowel, or locator-pin, ought to be in the position like the one in Fig 3.

As a field expedient, all you do is turn the igniter-assembly to the right position and grind off the locator-pin. Get the igniter set right, tighten the clamp-nut that holds the igniter in the burner. Be sure and drop the pot at the bottom of the heater when you re-position the igniter. You've got to do this to make sure she's lined up.

When you're through, the top of the burner'll look like Fig 4. Notice how the heater-element lines up with the wick.

And if you're worrying about the igniter slipping out of position, you needn't if you apply a little pressure when you tighten the clamp-nut holding the igniter in the burner. One of the boys in the shop couldn't budge the igniter with a pair of 10-in pliers after tightening the clamp-nut.

Just to be extra sure, and the first time you get a chance, have your shop replace the locator-pin so it'll fit the slot. In the meantime, your heater'll be all set for cold weather if you'll just clip off the dowel and turn the igniter so it's in the right position.

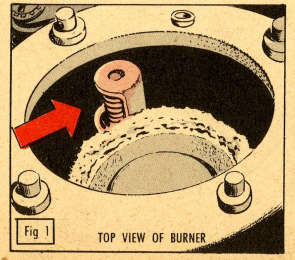


Fig 1 TOP VIEW OF BURNER

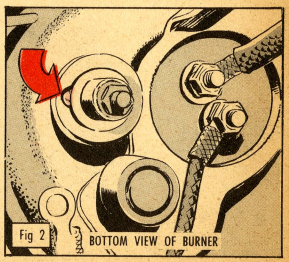


Fig 2 BOTTOM VIEW OF BURNER

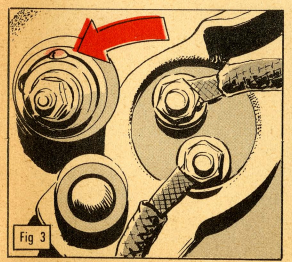


Fig 3

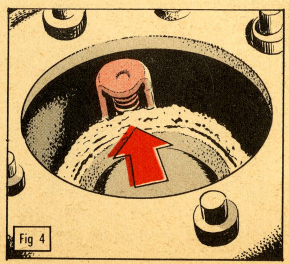
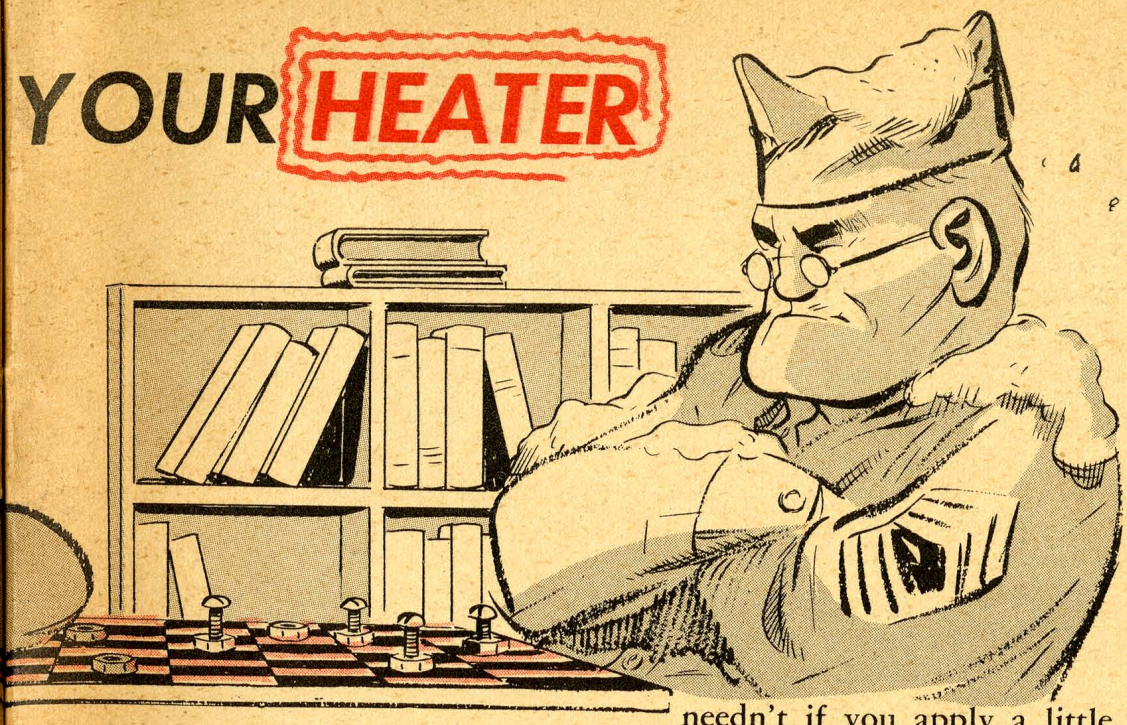


Fig 4

YOUR HEATER



nut that holds the igniter in the burner. Be sure and drop the pot at the bottom of the heater when you re-position the igniter. You've got to do this to make sure she's lined up.

When you're through, the top of the burner'll look like Fig 4. Notice how the heater-element lines up with the wick.

And if you're worrying about the igniter slipping out of position, you needn't if you apply a little pressure when you tighten the clamp-nut holding the igniter in the burner. One of the boys in the shop couldn't budge the igniter with a pair of 10-in pliers after tightening the clamp-nut.

Just to be extra sure, and the first time you get a chance, have your shop replace the locator-pin so it'll fit the slot. In the meantime, your heater'll be all set for cold weather if you'll just clip off the dowel and turn the igniter so it's in the right position.

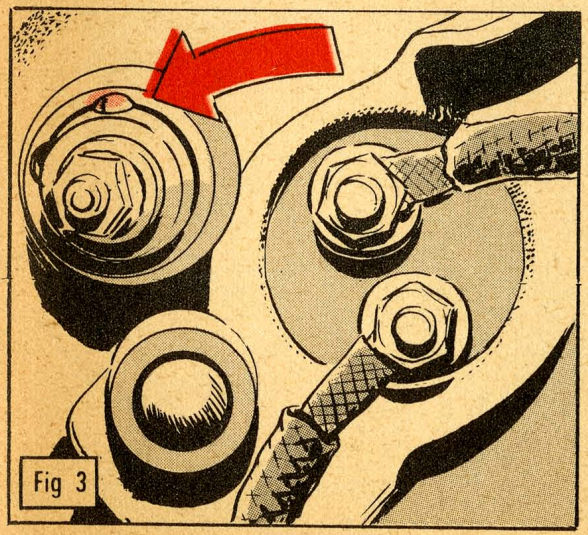


Fig 3

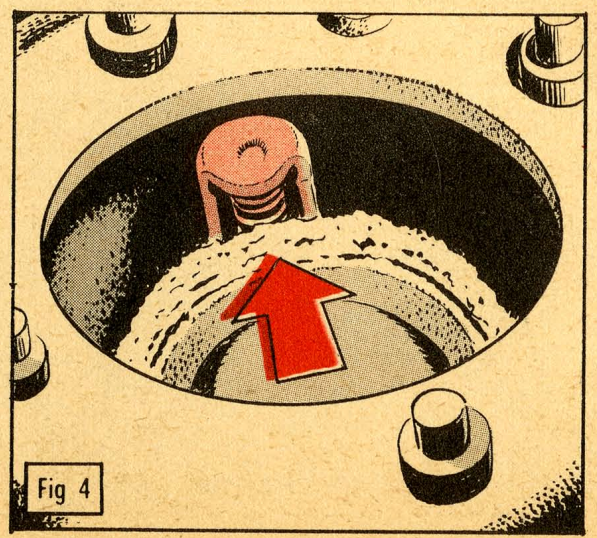
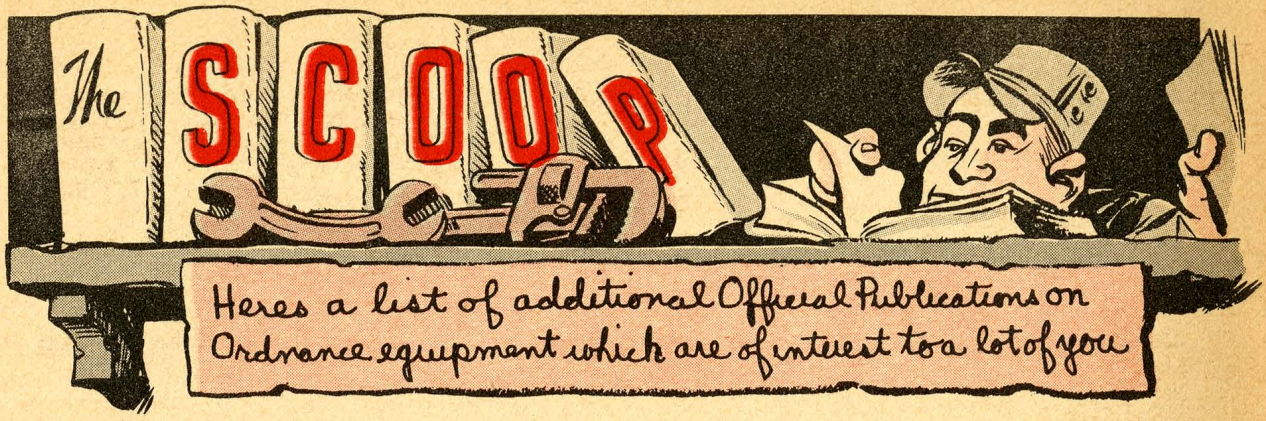


Fig 4



SNL's

Ord 9 SNL F-207 Vol 7 System, remote contr, M6A2, Feb 55

Ord 9 SNL F-235 Vol 13 'Scope, M86F, Apr 55

Ord 9 SNL F-245 Setter, fuse, M14, Apr 55

Ord 8 SNL F-344 Mt, 'scope, M87A1, Mar 55

Ord 7 SNL F-346 Thermometer, powd, temp, M1 and M1A1, Apr 55

Ord 9 SNL F-359 Sec 2 Drive, ball, T24, T24E2, Apr 55

Ord 8 SNL F-386 Computer, ball, T31, Apr 55

Ord 8 SNL G-249 Vol 38 Winteriz equip for shelter person for trk, cargo, 2-1/2-ton, 6x6, M34, M35, M135, M211, Mar 55

Ord 8 SNL G-249 Vol 54 Winteriz equip for gun, twin, 40-mm, sp, M42 (T141), Feb 55

Ord 7 SNL G-253 Gun, twin, 40-mm, sp, M42 (T141), Mar 55

Ord 7 SNL G-740 Truck, util 1/4-ton 4x4 M38, Feb 55

Ord 8 SNL G-740 Truck, util 1/4-ton 4x4 M38, Feb 55

Ord 5 SNL H-1 Standard hardware, Mar 55

Ord 5 SNL H-17 Brake lining kits, curtains, paulins, "V" belts, misc mat, Mar 55

Ord 6 SNL J-7 Sec 1 Tool set, organiz maint (2nd ech) set No. 1 comm (41-T-3538-850), Mar 55

Ord 6 SNL J-7 Sec 8 Tool set, organiz maint (2d echelon), set No. 9, gnd anch (41-T-3545-18), Apr 55

Ord 6 SNL J-7 Sec 13 Tool set, organiz maint, rocket btry (762-mm) (5180-00-17033), Apr 55

Ord 6 SNL J-7 Sec 9 Tool set, organiz maint (2d echl), set No. 7, hoist, tow (41-T-3545-16), Apr 55

Ord 6 SNL J-8 Sec 2 Tool set, field maint ord coll pt co. (41-T-3537-40), Mar 55

Ord 6 SNL J-8 Sec 3 Shop set, field maint blksmith (41-S-2990-165), Apr 55

Ord 6 SNL J-8 Sec 6 Fleld maint tool sets for shop set, small arms, field maint (41-S-2990-300), Apr 55

Ord 6 SNL J-8 Sec 34 Tool set, ord rt sup unit (762-mm) (5180-00-17034), Apr 55

Ord 6 SNL J-10 Sec 25 Tool kit: organiz maint, rkt mech (762-mm) (5180-034-8472), Mar 55

Ord 6 SNL J-10 Sec 26 Tool kit: guided miss repairman (NIKE) (5180-00-17049), Apr 55

Ord 6 SNL J-10 Sec 27 Tool set: guided miss elec comp repairman (NIKE) (5180-00-17050), Apr 55

Ord 6 SNL J-16 Sec 25 Tool sets, field, dep maint for: trucks, 6-ton, 6x6 Brockway and Ward La France, Corbitt, White mod 666, White mod 666E, Mar 55

Ord 6 SNL J-16 Sec 39 Tool sets, field, dep maint for: trks, 2-1/2-ton, 6x6 (SNL G-742), chassis, trk, M44, M45, M46; trk, cargo, M34, M35, M36; trk, dump, M47, M59; trk, V18A/MTQ (Signal); trk, tank, gasoline, 1200-gal, M49; trk, tank, water, 1000-gal, M50; trk, phone, V17A/MTQ (Signal); trk-tract, M48, M275; trk, van, shop, M109; trk, wrecker, crane, M108; trk, wrecker, light, M60, Apr 55

Ord 6 SNL J-16 Sec 53 Tool sets, field, dep maint for carriers; M75, M59; gun, twin, 40-mm, SP M42; how, 105-mm, SP, T98E1; how, 155-mm SP M44; tank, 76-mm gun, M41, M41A1; cargo, tractor M8E2, Apr 55

Ord 6 SNL J-16 Sec 64 Tool sets, field, dep maint for: Chass, semitrlr, 6-t, 2-whl, M117; chass, semitrlr, 12-t, 4-whl, M126; chass, trlr, 1/4-t, 2-whi, M115; chass, trlr, 1-1/2-t, 2-whl, M102, M103, M103A1; dolly, trlr convert, 6-ton, 2-whl, M197; dolly, trlr convert, 8-t, 2-whl, M198; semitrlr, cargo, 6-t, 2-whl, M118; semitrlr, cargo, 12-t, 4-whl, M127; semitrlr, low bed, wrecker, 12-t, 4-whl, M269, M270; semitrlr, tank, gas, 12-t, 4-whl, M131; semitrlr, van, cargo, 6-t, 2-whl, M119; semitrlr, van, office, 6-t, 2-whl, M164E1; trlr, bolster, pole handling, 3-1/2-ton, 2-whl, M271; (Signal Corps mod V-13 GT); trlr, bomb, 2-t, 4-whl, M143: trlr, cable reel, 3-1/2-t, 2-whl, M310 (Signal Corps mod K37B); trlr, cargo, 1/4-t, 2-whl, M100; trlr, cargo, 3/4-t, 2-whl, M101; trlr, cargo, 1-1/2-t 2-whl, M104, M104A1, M105A1; trlr, tank, water, 1-1/2-t, 2-whl, 400-gal, M106, M106A1, M107E1, M107E2, Apr 55

Ord 7-8 SNL J-118 Drill, elec, port, 115-v, univ curr, hv-duty, 1/4-in cap (Albertson mods No. Sioux 1525, Sioux 1525 No. 301) (40-D-341), Mar 55

Ord 7-8 SNL J-121 Drill, elec, port, 115-v, univ curr, hv-duty, 3/8-in cap (Black & Decker No. 362, types N, T) (40-D-343) and Drill, elec, port, 115-v, univ curr, hv-duty, w/vert stand, 3/8-in cap (Black & Decker, No. 362, types N, T) (40-D-344), Apr 55

Ord 7-8 SNL J-149 Drill, elec: port, 115-v, univ curr, hv-duty, 3/8-in cap (Skil, mod No. 63) (5130-473-6223), Mar 55

Ord 7-8 SNL J-172 Reamer drive, util: vari speed 1/3-hp, 115-v, 60-c, sgle-ph (K O Lee, mods A300C, D200S) (40-D-3200), Apr 55

Ord 7-8 SNL J-185 Hone, brake cyl, hyd, 3/4 to 2-1/2-in range (Ammco Tools, mods A012, 1000) (40-H-750), Apr 55

Ord 7-8 SNL J-198 Grinder, elec: 1/2-hp, 115-v, univ curr, whl size 6-in (Albertson mod 1195) (40-G-128-8) and grinder, elec: 1/2-hp, 115-v, univ curr, whl size 6-in, w/stand (Albertson mod 9115) (40-G-281-10), Apr 55

Ord 7-8 SNL J-231 Grinder, elec: port, 1/2-hp, 115-v, univ curr, whl size 6-in (Black & Decker type 6-in G) (40-G-128-8) and grinder, elec: 1/2-hp, 115-v, univ curr, whl size 6-in w/stand (Black & Decker type 6-in G) (40-G-128-10), Apr 55

Ord 7-8 SNL J-247 Hammer, pneu, rivet, 3-in stroke, 1/2-in cap (Thor Power Tool No. RC-30 mod 5268) (40-H-288), Apr 55

Ord 7-8 SNL J-257 Hammer, pneu, rivet, 3-in stroke, 1/2-in cap (Chicago Pneu Tool mod No. 3 Simplate) (40-H-288), Apr 55

Ord 7-8 SNL J-264 Machine, mill, plain, bench type, 1/2-hp, 110-v, 60-c, sgle-ph, w/equip and access (Atlas Press, mod MF-G) (40-M-38), Apr 55

TECHNICAL MANUALS

TM 9-8226 1-1/2-ton, 2-whl cargo trailer M104, M104A1, M105A1; 1-1/2-ton, 2-whl chassis trailer M103A1; 1-1/2-ton, 2-whl water tank trailer M106, M106A1, M107A1, Apr 55

TM 9-8826 5-ton 4x2 tract trk, 5-ton 4x2 trk chassis w/cab, and 5-ton 4x2 van trk (Fed mod 45M2), Dec 54

TM 9-9006-1 90-degree angle 1/4-in cap univer current 110-v port elect drill (Chicago pneu tool mod 800-DA-1875) (40-D-330), Mar 55

TM 9-9036-4 Sgle-ph 60 cy 110-v 1/4 HP bench grind w/twist drill holder for wire gage size 1 50 41, ltr size A to Z, and 3/32 to 3/4 inch fract size drills (Black Diamond Saw, Machine Works mod 3C) (40-G-148-50), Mar 55

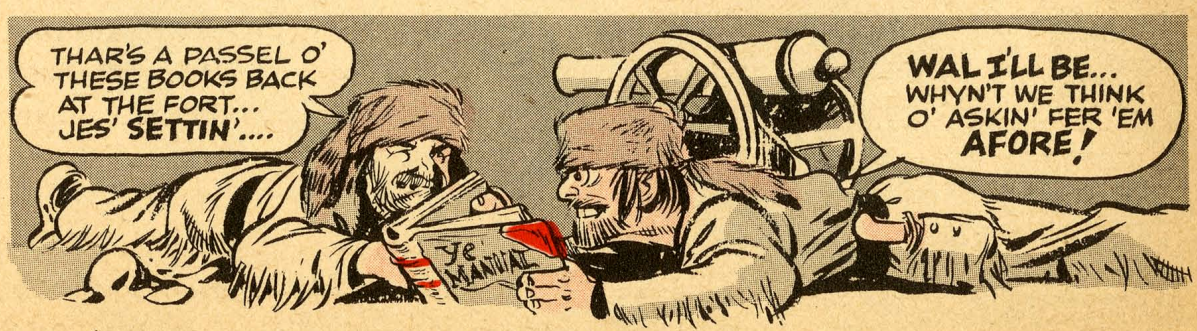
TM 9-9036-6 Whl size 10x1 DC 110-v 1 hp util grind, mach (Brown-Brockmeyer mod MSG93-ES5133) (40-C-144-15), Apr 55

TM 9-9804-2 Sgl-phase 60-cy 110/120-v 5-HP start motor and elect units gen-elect test and maint tbl (Heyer Products Co., Inc., mod 550) (4910-356-7617), Apr 55

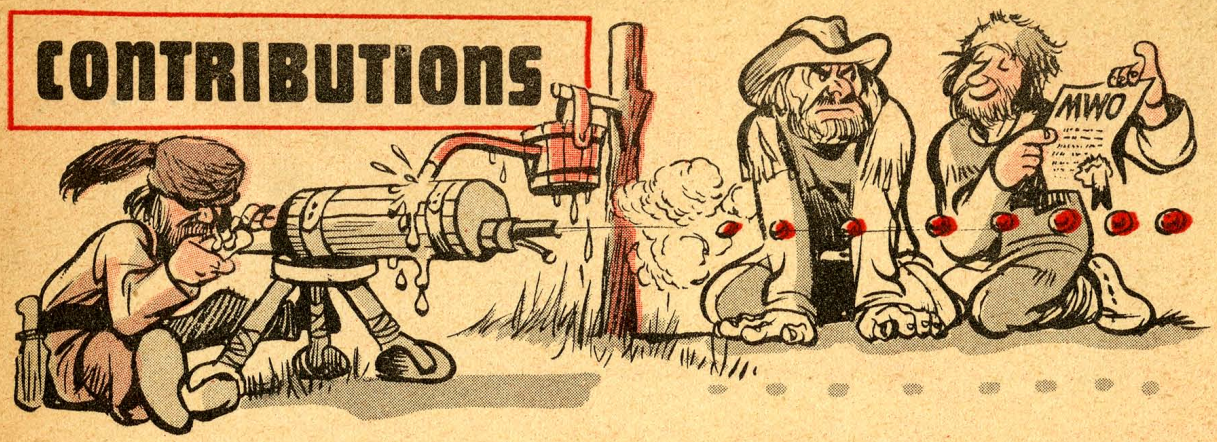
TM 9-9814-1 0.720- to 2.000-in diam cap 1/3-HP AC 115-v 60-cy sgle-phase bench-type horiz honing mach w/mandrels, stones, Apr 55

TM 9-9834-1 300-0-1000, 150-0-500, 30-0-100, 15-0-50, 3-0-10 amp range 0-100, 0-50, 0-10, 0-1 volt range low volt circuit Tester (Joseph Weidenhoff mod 1120) (17-T-5575-50), Apr 55

TM 9-9836-1 1/4- to 5/8-in cap wet-type univ-curr 110-v valve face grind mach (US Elect Tool mod VR-7) (4910-261-7848) (Form valve refacer 40-V-505), Mar 55



CONTRIBUTIONS



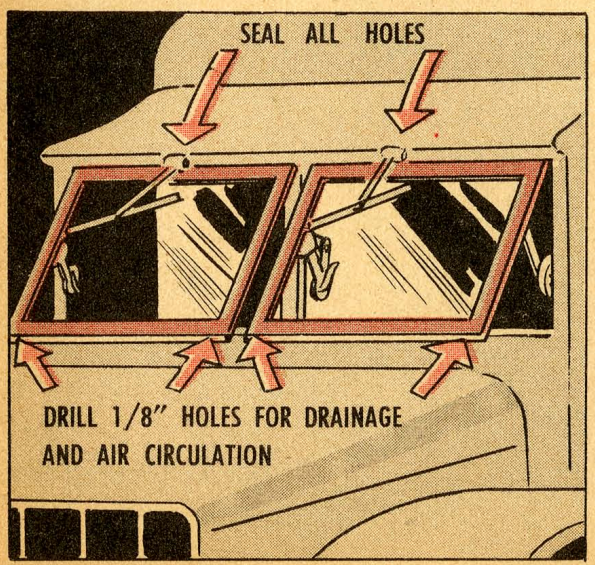
SAVING YOUR WINDSHIELDS

Dear Editor,

Over here on a Pacific island it's so humid even the ocean takes a daily bath in sweat. With all this dampness and condensation floatin' 'round rust is public enemy No. 1.

When I took the screws out of a windshield catch assembly on a M37 ¾-ton truck you'd think it was Niagara Falls the way the water poured out. I got the problem solved, tho.

I drilled four ⅛ in holes in the bottom of the assembly—one in each end of the assembly, two in the middle of the assembly, one on each side of the center rib.



Although this won't stop condensation from forming, it acts as a delaying action against "comrade" rust. It gives condensation a chance to drip out.

Sgt Felix J. Richard
APO 354, San Francisco

(Ed Note— Splendid idea. Humid climates are bound to cause condensation and rust in your windshield assemblies sooner or later. But with this idea, the rust'll come a lot later—not sooner. To be 100 per cent safe, seal the holes 'round the windshield wiper motors to keep rain from leaking in. Your idea can be used on all vehicles, not only the ¾-ton. You'll soon see an MWO coming your way covering this fix.

FOR CRACKED JOINTS

Dear Editor,

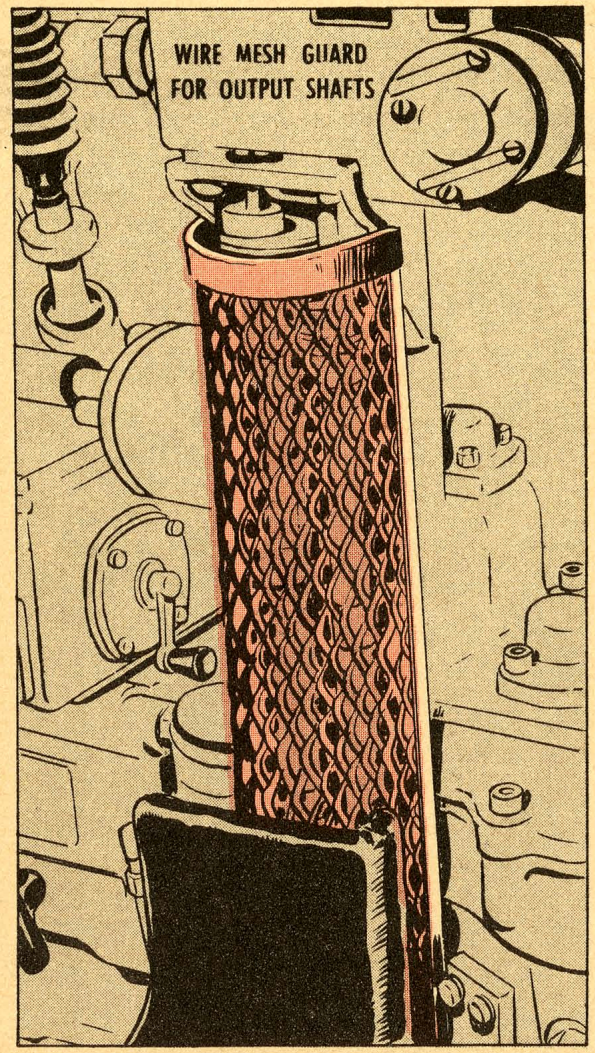
Here's a fix we've got for our M48 tanks to stop personnel from breaking the universal joints on the output shafts linking the commander's control-handle-assembly with the solenoid-clutch-housing.

We made up a piece of wire mesh and fitted it over the assembly. It keeps the linkage from getting kicked around by

the crew when they climb in and out of the tank thru the commander's cupola.

Mr. J. D. Leonard
Camp Stewart, Ga.

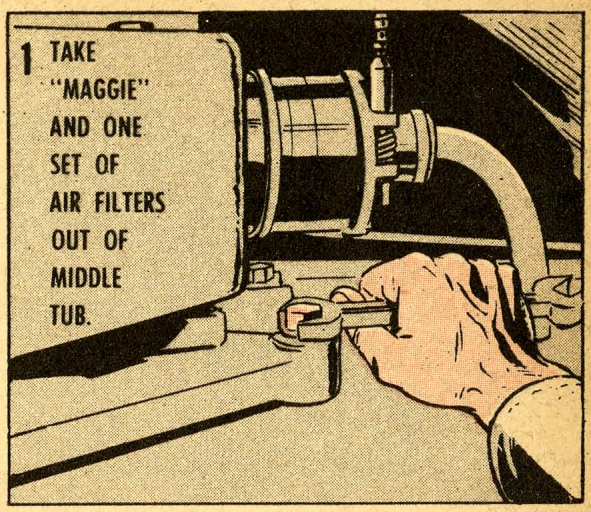
(Ed Note—Ordnance has come up with a different type of shield which will be put on at the depot level. Until your tank is modified, best to train your crew to keep their clodhoppers off that linkage.)

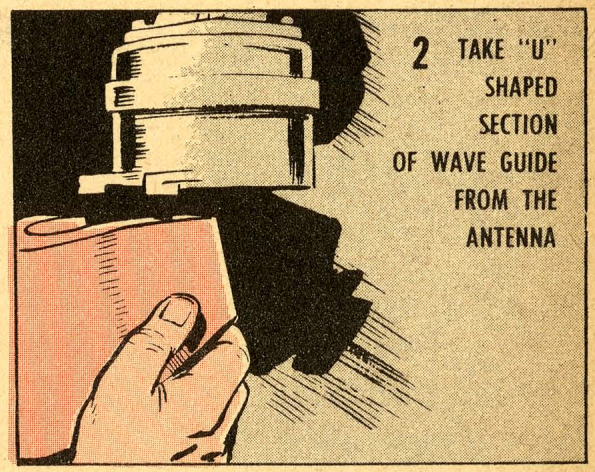


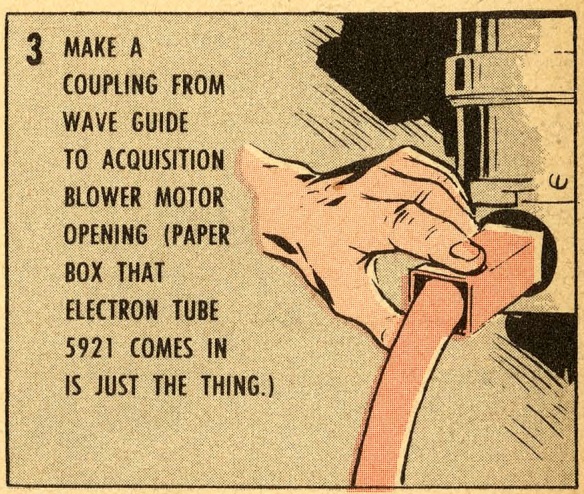
GONE WITH THE WIND

Dear Editor,

Keeping the cobwebs and dust blown out of your acquisition waveguide is a snap with this system:







Turn on the motor and let 'er blow.

'Course, this is only for non-pressurized waveguides.

Mr. M. A. Gleaton
Ft Belvoir

(Ed Note— Splendid method.)

Water splits steel

Splashing cold water on a hot exhaust manifold is why most of the cracked ones get that way. Next time you go washing your vehicle, keep water off the engine. At least until it's had a chance to cool down.

Hot monster?

One thing that'll make your M74 recovery vehicle's engine a hot-box fast is to operate with the rear exhaust deflectors raised. Keep 'em down where they're supposed to be, and you'll not overheat. Same goes for all those vehicles with the M4A3 tank chassis. You'll see this in the TM one of these days.

So long, Pvt Chipps

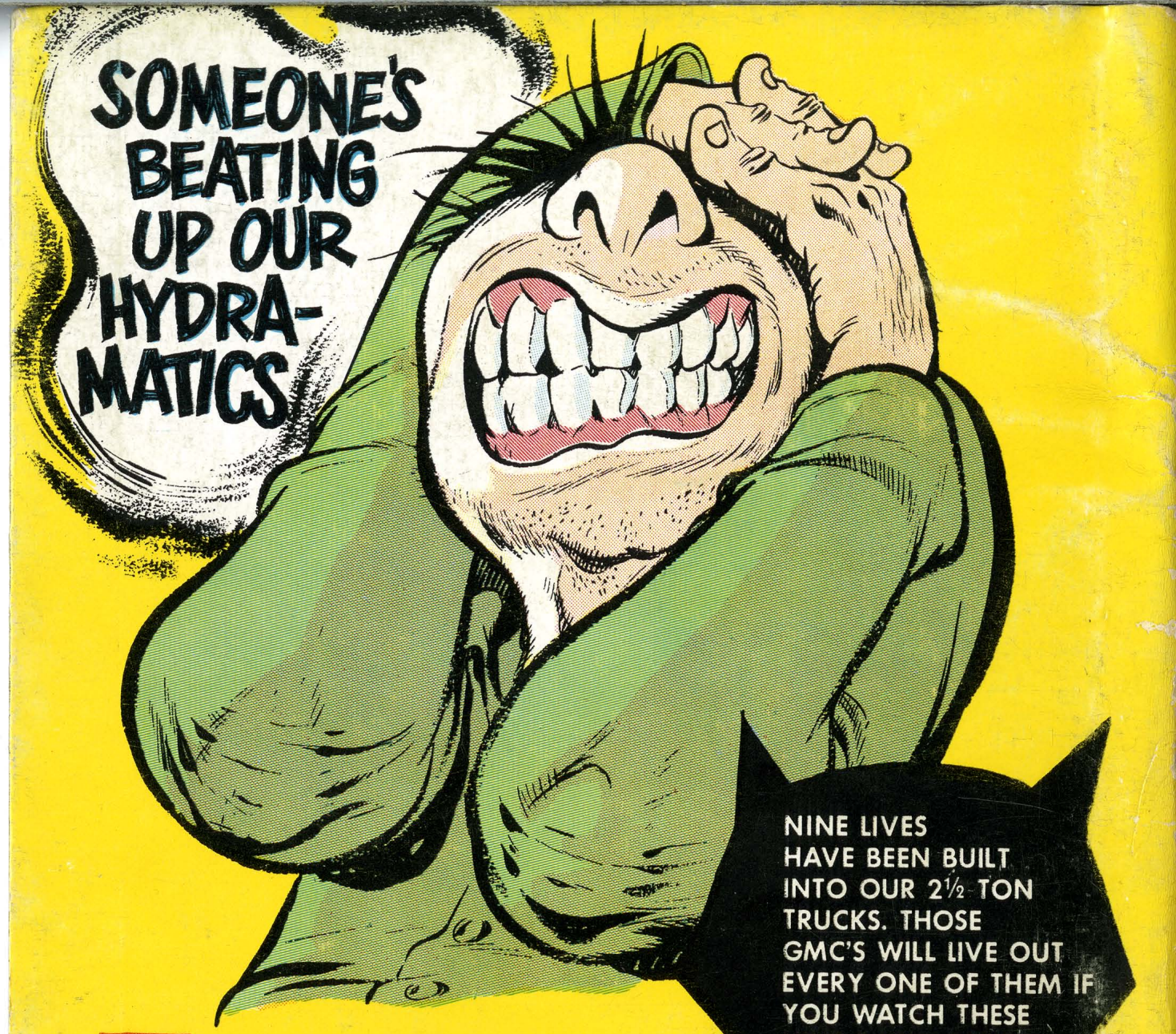
He fired a grenade into the air. It fell to earth—he knew just where. He waited for the bang, but it never came, so he picked up the grenade to fire it again. What happened this time you can easily guess. The dud came to life—what a mellava hess!

No-play's the thing

Any time you tank men find any vertical play in your turret race—it shouldn't be. Take a quick look at your retainer bolts (hull-to-race, race-to-turret) and see if maybe they're loose and causing the play. If so, tighten 'em. If not, better take the problem to Ordnance 'fore any serious damage is done.

'Dog daze?

Been wondering wot's needed done to your Bulldog tank (M41, M41A1) before installing that Signal Corps air-ground radio (AM/ARC-27)? Wonder no more. The dope's to be had via MWO Ord G251-W7.



NINE LIVES HAVE BEEN BUILT INTO OUR 2½ TON TRUCKS. THOSE GMC'S WILL LIVE OUT EVERY ONE OF THEM IF YOU WATCH THESE NINE BASIC CAUSES OF FAILURES.

KEEP THE PROPER ADJUSTMENT ON THE LINKAGE THAT KEEPS THE TRANSMISSION AND CONTROL LEVER DETENTS SYNCHRONIZED.

CHECK FRONT BAND ADJUSTMENT IN ACCORDANCE WITH TB 9-819A-1 (9 JULY 52) AND THEN AT EVERY 1000 MILES (C SERVICE).

KEEP PROPER OIL LEVEL AND GRADE IN TRANSMISSION.

WARM-UP AT FAST IDLE WITH CONTROL LEVER IN "NEUTRAL"—UNTIL BUZZER STOPS.

DRIVE WITH CONTROL-LEVER IN PROPER POSITION FOR TERRAIN.

ALWAYS BRING THE TRUCK TO A DEAD **STOP** BEFORE SHIFTING INTO OR OUT OF "REVERSE" POSITION.

TAKE IT EASY — NEVER 'COWBOY' YOUR TRUCK.

DRIVE WITHIN THE SPEED LIMITS OF THE TERRAIN.

KEEP IN FORWARD OR REVERSE GEAR, THE RIGHT DIRECTION, NATCH, WHEN ROLLING. NEVER COAST FORWARD OR BACKWARD WHEN IN NEUTRAL.